

**Assessment Centers from the Applicant's Perspective:  
Investigating Potential Antecedents and Outcomes of Applicant Reactions**

Thesis

(cumulated thesis)

Presented to the Faculty of Arts and Social Sciences

of the University of Zurich

for the Degree of Doctor of Philosophy

by

Natalia Merkulova

Accepted in the Spring Term 2014

on the Recommendation of the Doctoral Committee:

Prof. Dr. Martin Kleinmann (main advisor)

Prof. Dr. Cornelius König

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## **Introduction**

Assessment centers (ACs) are popular personnel selection procedures that are used by organizations all over the world for selection and promotion, as well as for development purposes (König, Klehe, Berchtold, & Kleinmann, 2010; Krause & Thornton, 2009; Schuler, Hell, Trapmann, Schaar, & Boramir, 2007). Many studies have documented the predictive validity of these selection tools by showing that ACs effectively select candidates who prove to be successful employees (Arthur, Day, McNelly, & Edens, 2003; Hardison & Sackett, 2007; Hermelin, Lievens, & Robertson, 2007). However, the social validity (Schuler, 1993) of ACs, or the understanding of the impact that AC-participation may have on the candidates' evaluation of the AC and their subsequent intentions, attitudes, and behaviors, is still in need of further scrutiny. Since not only organizations select their future employees, but also applicants select the organizations they are willing to work for, it is of central concern that the candidates who attend an AC react positively and are motivated to work for the organization (Gilliland, 1993; Hausknecht, Day, & Thomas, 2004).

Recent years have witnessed a growing interest in social validity, or, in more general terms, applicant reactions to selection procedures (Hausknecht et al., 2004; Truxillo & Bauer, 2011). Applicant reactions have been connected with a variety of important outcomes, like the intentions to accept a job offer, the candidates' involvement in a later job (Noe & Steffy, 1987), or even the intentions to buy a company's products (cf. Hausknecht et al., 2004; Ryan & Ployhart, 2000). However, there remains much to be understood about the potential antecedents and behavioral outcomes of applicant reactions to selection procedures (Hausknecht et al., 2004; Ryan & Ployhart, 2000; Truxillo & Bauer, 2011). In addition, since applicant reactions may vary depending on the selection technique (Hausknecht et al., 2004), there is a need for accumulated knowledge about the antecedents of applicants' reactions to a

specific selection procedure, especially to such an important and widely used selection battery as an AC.

Therefore, the general aims of this thesis were to address the concern of candidate reactions to ACs by expanding our knowledge of the potential antecedents and consequences of candidate reactions to ACs. An additional goal was to provide guidance on how AC candidates' reactions may be improved. The present thesis focused on applicant reactions to ACs from three different perspectives: From the perspective of the characteristics of the selection procedure, the goal was to contribute to our understanding of the underlying constructs that are used for candidate feedback. From the perspective of the characteristics of AC-candidates, we explored individual difference factors that may predispose applicants to react in a predictable way. Finally, from the perspective of selection outcomes, our goal was to advance our understanding of how candidate reactions to ACs may affect the candidates' post-selection behaviors that are relevant for organizational effectiveness.

In the following, I will first provide a brief definition of ACs and outline the reasons why candidate reactions are important in ACs. Then, I will give an overview of the theory and current state of research of applicant reactions, particularly focusing on three areas of research that are relevant for ACs. Next, I will introduce the three studies that were conducted to address current research needs in the area of applicant reactions to ACs.

### **Assessment Centers**

ACs prototypically involve different techniques and/or work simulations that are used to evaluate job-relevant candidate behavior. This behavior is traditionally rated by multiple trained assessors with regards to several dimensions that are defined as critical for a specific job (Povah & Povah, 2012). The assessor ratings are usually aggregated into dimension scores or into an overall assessment rating, depending on the purpose of the AC, and are then used as a basis for decisions concerning the candidates' career and/or the candidates' further development (Povah & Povah, 2012). Since ACs are commonly designed on the basis of job



analyses and involve situations in which job-relevant behaviors should be displayed, they are usually perceived as job-relevant by the applicants (Macan, Avedon, Paese, & Smith, 1994; Thornton & Gibbons, 2009). Therefore, it is expected that they are rated positively by their participants (Howard, 1997).

However, there are several reasons to believe that candidate reactions, other than perceptions of the job relatedness of the selection procedure, are especially important in the case of AC-candidates. ACs usually last one to four days and they place a variety of demands on their participants. It has been argued that longer selection procedures may lead to less favorable applicant perceptions (Ployhart & Ryan, 2000). Furthermore, researchers found that a significant proportion of candidates report stress and anxiety about going through an AC (Fletcher & Kerslake, 1993; Iles, Robertson, & Rout, 1989), and some authors suggest that applicant reactions to ACs may be particularly strong (Fletcher, 1991; Fletcher & Kerslake, 1993). In addition, since ACs are often used for promotions and, in the case of the United States of America and Africa, increasingly for development (Povah & Povah, 2012), internal candidates' reactions are of central concern. Internal candidates tend to identify with their employer more than external applicants (Ford, Truxillo, & Bauer, 2009), and since individuals show stronger reactions to injustice in a group with which they identify (Huo, Smith, Tyler, & Lind, 1996), internal candidates may react particularly sensitively to internal selection procedures. For this reason, it is important to design and administer selection procedures that are used for internal purposes, in this case ACs, in a way that is considered optimal for AC candidates' reactions.

### **Applicant Reactions**

Understanding that applicant reactions may affect a variety of outcomes that are critical from business (e.g., applicants' intentions to accept a job offer or to buy the companies' products), ethical (e.g., applicants' self-esteem), and legal perspectives (e.g., applicants' intentions to pursue discrimination cases) (cf. Gilliland, 1993; Schuler, 1993),

researchers have developed a growing interest in applicant reactions to selection procedures (Truxillo & Bauer, 2011). The term “applicant reactions” involves various perceptions, attitudes, affects, or cognitions that an individual might have with regards to the hiring process (Ryan & Ployhart, 2000), and it has been hypothesized that applicant reactions affect a variety of the candidates’ later intentions, attitudes, and behaviors (Gilliland, 1993; Hausknecht et al., 2004).

Although several theoretical models that explain the relationships between applicant reactions and their relevant outcomes have been proposed by researchers (e.g., Gilliland, 1993; Schuler, 1993; Arvey & Sackett, 1993), the present thesis focuses on the integrated model of applicant reactions by Hausknecht et al. (2004) that combines most of the aspects of these proposed models (cf. Gilliland & Steiner, 2012). The integrated model of applicant reactions describes the process by which the candidates’ perceptions of various characteristics of the selection procedure (e.g., job relatedness, opportunity to perform), characteristics of the candidates themselves (e.g., gender, personality), of the job, and of the organization (e.g., selection ratio) lead to candidate perceptions during a selection procedure (e.g., procedural justice, test motivation; Gilliland & Steiner, 2012; Hausknecht et al., 2004). These candidate perceptions are presumed to consequently affect the candidates’ post-selection pre-hire intentions, attitudes, and behaviors as well as their post-hire intentions, attitudes, and behaviors.

An emerging body of research documents the effects of several applicant perceptions (e.g., job relatedness of the selection procedure, procedural justice) on a variety of post-selection pre-hire outcomes that are important for organizations, like perceived organizational attractiveness, the intentions to accept a job offer, and intentions to recommend the organization to acquaintances and friends (cf. Gilliland & Steiner, 2012; Hausknecht et al., 2004; Ryan & Ployhart, 2000). In times of low unemployment rates and when there is greater competition for employees between companies, these outcomes are especially critical for

organizations. Furthermore, applicant reactions were also found to be related to the applicants' self-perceptions, to litigation intentions (cf. Gilliland & Steiner, 2012; Hausknecht et al., 2004), and to their later attitudes, such as organizational commitment and job satisfaction (Ambrose & Cropanzano, 2003). These findings illustrate the importance of further investigating factors that influence applicant reactions to selection procedures.

### **Applicant Reactions and Characteristics of the Selection Procedure**

By exploring characteristics of the selection procedure in light of applicant reactions, research has shown that job relatedness and opportunity to perform are the most important factors that influence applicant reactions to selection procedures (cf. Gilliland & Steiner, 2012; Truxillo & Bauer, 2011). Since ACs are generally perceived as job-relevant by their participants (Macan et al., 1994) and usually give the candidates a variety of opportunities to show their job-related skills, it is generally presumed that applicants should react positively to ACs (Povah & Povah, 2012).

However, one specific characteristic of ACs has the potential to be of particular concern for applicant reactions, namely AC construct-related validity. As explained below, evidence suggests that ACs do not measure the constructs they were designed to measure. Since evidence suggests that applicant perceptions are influenced by the constructs that are assessed in a selection procedure (Ryan & Ployhart, 2000), and since the underlying constructs of ACs are also the basis of feedback that is given to candidates concerning their AC performance, it is important for the candidates' acceptance of the AC, for their further development, and for their wellbeing (Fleenor, 1996) that these constructs are valid. For example, if candidates are told to focus on improving performance in a particular dimension that does not reflect the skills that are critical for their jobs, the consequences may be detrimental (Arthur & Day, 2011; Petrides, Weinstein, Chou, Furnham, & Swami, 2010). For this reason, AC construct-related validity is also an important characteristic from the perspective of applicant reactions.

The status of AC construct-related validity has been controversial for decades. ACs are traditionally designed to measure the extent to which participants “display selected behavioral dimensions” (Arthur, 2012, p. 95). However, ratings of presumably different dimensions in the same exercise repeatedly show higher correlations with each other than ratings of the same dimension across different exercises (Melchers, Henggeler, & Kleinmann, 2007; Sackett & Dreher, 1982; Woehr & Arthur, 2003). Similar results have also been achieved with the means of confirmatory factor analysis (CFA): Several studies have shown that variance in AC ratings is mostly attributable to exercises or to exercises and one general dimension, but not to the dimensions that were assessed (Lance, Lambert, Gewin, Lievens, & Conway, 2004; Lance, 2008).

Based on these controversial findings, some scientists suggested abandoning the use of AC dimensions and proposed that ACs should be designed to measure task-based behavior (Lance, 2008). These researchers believe that candidate behavior should be assessed and rated separately for each exercise, using scaled behavioral checklists (cf. Jackson, 2012). In their opinion, feedback to candidates should be based on behavior and not internal attributes, attitudes, or personality (Jackson, 2012). However, some researchers suggest that tasks are less meaningful for developmental feedback than dimensions, and that it would possibly be more beneficial to combine dimensional feedback with task specifics, like specific key behaviors (Howard, 1997).

Finally, in another approach to AC construct-related validity, Hoffman, Melchers, Blair, Kleinmann and Ladd (2011) proposed an alternative model of the internal structure of ACs that is much more promising with regards to construct-related validity. In this model, broad dimensions, exercises, and a general performance factor are seen as constituents of AC-performance. Hoffman et al. (2011) presented initial support for the proposed structure of AC-ratings from four samples, yet still more research is needed to determine the generalizability of the proposed alternative model of AC-ratings (Hoffman, 2012). Furthermore, knowledge

about the different AC-components is still very limited. More data concerning the criterion-related validity and the nomological network of the new components would help researchers to better understand these underlying constructs of AC-performance.

### **Applicant Reactions and Characteristics of the Applicants**

Information about how some individuals may be predisposed to react in predictable ways could be helpful for organizations that seek to make a favorable impression on candidates (Bernerth, Feild, Giles, & Cole, 2006); however, little is still known about the individual difference variables that may affect applicant reactions (Hausknecht et al., 2004; Ryan & Ployhart, 2000; Truxillo & Bauer, 2011). Few studies have shown that the Big Five factors of personality are related to some applicant perceptions (Bernerth et al., 2006; Oostrom, Born, Serlie, & van der Molen, 2010; Truxillo, Bauer, Campion, & Paronto, 2006). There is also very limited information to date about how other dispositional variables that are important in work contexts, like GMA, the different core self-evaluations constructs, or trait affect, influence perceptions that applicants may have during selection procedures.

Furthermore, evidence suggests that applicants' reactions differ depending on the selection procedure (e.g., cognitive ability tests vs. personality tests) and on the study setting, which means whether the study was conducted with actual applicants or students (Hausknecht et al., 2004; Truxillo, Bodner, Bertolino, Bauer, & Yonce, 2009). The majority of previous studies that have explored the influence of dispositional variables on applicant perceptions involved written or media-based tests (Bernerth et al., 2006; Oostrom et al., 2010; Truxillo et al., 2006), and a majority of these studies were conducted with student samples (e.g., Bernerth et al., 2006; Oostrom et al., 2010). Therefore, these findings may not generalize to ACs or to actual applicants. More knowledge is needed to understand how dispositional variables affect applicant perceptions in actual selection settings and with regards to important selection procedures such as ACs.

## **Applicant Reactions and Behavioral Outcomes**

Finally, although an emerging body of research is dedicated to applicant reactions to selection procedures and their subsequent attitudes and intentions, it is still unclear to which extent candidate reactions relate to their actual behavior after the selection procedure (cf. Gilliland & Steiner, 2012; McCarthy et al., 2013). Findings with regards to candidate post-selection behavior have been sparse and are inconsistent to date. One study suggests that providing applicants with explanations concerning an outcome decision positively influences their later reapplication behavior (Gilliland et al., 2001). Furthermore, it has been found that applicant perceptions influence job performance indirectly through test performance (McCarthy et al., 2013). However, a number of studies failed to find a relationship between applicant perceptions and their later behaviors (Becker, Connolly, & Slaughter, 2010; Gilliland et al., 2001; McCarthy et al., 2013; Truxillo, Bauer, Campion, & Paronto, 2002) or yielded inconsistent results (Gilliland, 1994).

Given the limited support concerning the influence of applicant perceptions and their subsequent behaviors, some researchers suggest that one could question the value of applicant reactions research (Ryan & Ployhart, 2000). They argue that if applicant reactions do not have an impact on actual behaviors, there may be fewer grounds to endorse in the applicants' view of selection procedures. For this reason, more research is urgently needed to understand the behavioral consequences of applicant reactions to selection procedures.

## **The Present Thesis**

The aim of the present thesis was to address the aforementioned research needs and to advance the understanding of the antecedents and consequences of applicant reactions to ACs. Below, I present a short overview of the main chapters included in this thesis.

*Study 1* addressed the antecedents of applicant reactions from the part of characteristics of the selection procedure, and thus explored AC construct-related validity in an operational AC. Different models of AC-ratings that have been traditionally tested in CFA

research (Hoffman et al., 2011; Lance et al., 2008) were compared with the alternative model of AC-ratings proposed by Hoffman et al. (2011) in terms of best model fit. Furthermore, the criterion-related validity of the proposed components of the new model was determined with regards to a set of two new criteria, namely academic training performance and military training performance. Finally, to understand the nomological network of the proposed model components, their relationships with a variety of external variables were investigated. These variables were GMA, the Big Five, the different core self-evaluations constructs, and trait affectivity. For this study, data of 936 AC candidates were analyzed.

In *Study 2*, antecedents of applicant reactions on the side of the applicants were addressed (Hausknecht et al., 2004). First, previously studied individual difference variables, namely the Big Five factors of personality and GMA, were tested with regard to their relationship with different applicant perceptions of an operational AC. In this study, applicant perceptions that are specific for applicants' acceptance of ACs (Kersting, 2010) were measured. Furthermore, we added to knowledge of the antecedents of applicant perceptions by studying additional dispositional variables that are important in the job performance literature, but have rarely been considered in applicant reactions research to date. These variables are the different core self-evaluations variables as well as trait positive and trait negative affectivity. The study was conducted in a sample of 313 AC candidates.

Finally, *Study 3* addressed the need for information about the behavioral consequences of applicant reactions to ACs. The postulated relationship between applicant perceptions and behavioral outcomes was tested under conditions that make it more likely for applicant perceptions to affect their later behavior: a) the study was conducted with a sample of internal candidates, b) a behavioral outcome was chosen that is more probably affected by applicant perceptions than previously studied outcomes (e.g., contextual performance), and c) applicant perceptions that are conceptually related to the behavioral outcome were studied in a conceptually matched selection procedure as suggested by the compatibility principle by

Ajzen and Fishbein (1977). Furthermore, the proposed relationship between applicant perceptions and behavior was put to a stronger test by studying applicant perceptions at two different stages of the selection procedure (Uggerslev, Fassina, & Kraichy, 2012), and by controlling for factors that were found to be important predictors of applicant reactions and selection outcomes (Ryan & Ployhart, 2000), namely outcome favorability, distributive justice, and the pre-selection measures of the behavioral outcome. The study was conducted in a sample of 272 candidates.

These studies will be presented in the respective *Chapters 1 to 3*. In the last Chapter *General Discussion*, I will draw main conclusions from the three studies that were conducted for the present thesis as well as explore the practical implications and directions for future research that can be deduced from the studies' results.



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## **Chapter 1**

### **A New Conceptual Model for Assessment Center Ratings: Testing its Generalizability and its Nomological Network**

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### **Abstract**

The present study tested a new conceptual model of the underlying factors of dimension ratings in assessment centers (ACs) proposed by Hoffman, Melchers, Blair, Kleinmann, and Ladd (2011) that includes broad dimension factors, exercise factors, and a general performance factor. Moreover, we evaluated the criterion-related validity of the different components and analyzed their nomological network. Results showed that all components (i.e., broad dimensions, exercises, and general performance) were significant predictors of training performance. Furthermore, broad dimensions showed incremental validity beyond exercises and general performance. Finally, the relationships between the AC factors and individual differences constructs, such as the Big Five, core self-evaluations, positive and negative affectivity, supported the construct validity of broad dimensions and provided further insights in the nature of the different AC components.

Assessment centers (ACs) are prevalent in modern personnel selection practices and are commonly used for employee selection, for employee development, or for promotion decisions (Krause & Thornton, 2009). Yet despite their promising criterion-related validity (Arthur, Day, McNelly, & Edens, 2003; Hardison & Sackett, 2007; Hermelin, Lievens, & Robertson, 2007), the construct-related validity of ACs has been controversial for decades.

In ACs, different performance aspects (e.g., analytical or interpersonal skills), which are referred to as dimensions, are traditionally assessed in different exercises (Sackett & Dreher, 1982). However, ratings of the same dimensions that stem from different exercises usually show much lower correlations than ratings of assumedly different dimensions that are rated within the same exercise (see Melchers, Henggeler, & Kleinmann, 2007, or Woehr & Arthur, 2003, for meta-analytic evidence). Similarly, confirmatory factor analyses (CFAs) conducted on the basis of such post-exercise dimension ratings (PEDRs) from ACs found that dimensions rarely emerge as latent factors whereas exercises do (Lance, Lambert, Gewin, Lievens, & Conway, 2004). Furthermore, when dimensions emerge at all, they are usually highly correlated with one another (e.g., Bowler & Woehr, 2006). Additionally, instead of separate dimensions, a general performance factor emerges regularly that seems to underlie performance across all PEDRs in an AC (Lance, Lambert et al., 2004). Taken together, these results were long considered as being problematic for the construct-related validity of PEDRs from ACs (see Lievens, 1998, or Thornton & Gibbons, 2009, for reviews).

However, recently Hoffman, Melchers, Blair, Kleinmann, and Ladd (2011) suggested a new approach to modeling dimensions in ACs and found evidence that seems to be much more promising concerning AC construct-related validity. Specifically, they suggested that a mixed-model architecture with exercise factors, a general performance factor, and broad dimension factors that group together sets of similar dimensions represents a more appropriate structure for AC ratings. Furthermore, they presented evidence from four samples that such an underlying structure provided a close fit to AC data and also a significantly better fit than

previously suggested models. In light of past findings, the support for dimensions using this new structure is promising. Yet, in light of the persistent and consistent results questioning the construct validity of dimensions (Lance, 2008; Lance, Lambert et al., 2004), it is important to determine whether this new structure of AC ratings generalizes to other contexts.

Moreover, the relative importance of the different latent AC factors in predicting performance criteria is in need of further scrutiny because knowledge concerning the relationships of the new AC components and criteria is still very limited. Specifically, in Hoffman et al.'s (2011) study, criterion data were available for only two samples. Furthermore, the results for some of the latent factors in Hoffman et al.'s studies seem to be inconsistent with previous research. Therefore, more evidence concerning the relationships between the different latent AC factors and performance criteria is required.

Beyond that, knowledge concerning the nomological network of the underlying AC factors should be expanded. Even though Hoffman et al. (2011) presented some initial results with regard to several individual difference variables for two of their samples, evidence concerning the relationships of the latent AC factors with additional individual difference constructs is needed. Thus, by investigating the pattern of relations between the proposed AC components and external constructs, our understanding of the external construct-related validity of the latent AC factors can be deepened.

Taken together, it is the aim of the present research to evaluate the generalizability of the recently suggested structure of AC ratings – especially concerning the existence of broad dimension factors – in a large sample from an operational AC. Furthermore, we seek to explore the criterion-related validity of the different latent AC factors. Finally, our goal is to expand the nomological net of the latent AC factors.

## Previous Research

### Internal Structure of Assessment Center Ratings

Before we describe the new conceptual structure suggested by Hofman et al. (2011), we will briefly outline the models that were regularly tested in prior AC research using CFAs. Specifically, based on different conceptualizations of ACs, previous research has repeatedly tested the following four models of the underlying structure of PEDRs from ACs.

Model 1 (J-dimensions, 0-exercises) postulates that there are no situational influences to performance in ACs and that only dimensions account for variance in AC ratings. This means that a latent factor represents each measured dimension, but that the specific exercises should not be of importance. This model usually fails to converge to an admissible solution (Lievens & Conway, 2001; Lance, Lambert et al., 2004). Model 2 (J-dimensions, K-exercises) presupposes that both correlated exercises and correlated dimensions represent the internal structure of an AC. This means that the variance in PEDRs should, on the one hand, be attributable to the different dimensions that were rated and, on the other hand, to the different exercises. Empirically, however, this model also shows systematic problems of admissibility and convergence in CFAs (Lance, Lambert et al., 2004; Lance et al., 2000). Model 3 (0-dimensions, K-exercises) only includes multiple correlated exercise factors but no dimension factors, assuming that AC performance is solely triggered by situational cues and that it is inconsistent across exercises. This model commonly converges to an admissible solution. This has led some researchers to suggest that ACs mainly measure cross-situationally specific performance (Lance, 2008). Finally, Model 4 (1-general performance factor, K-exercises) advocates that some aspect of performance in an AC is consistent across exercises and may be represented by a single general performance factor in addition to the different exercise factors. A large scale quantitative review suggests that this model is usually admissible and often provides a better fit in comparison to the previously mentioned models (Lance, Lambert et al., 2004).

Yet according to an interactionist approach that views behavior as a function of both a person with specific traits and attributes as well as the particular situation in which this person is in (Lewin, 1946), more interindividual attributes should be visible in the variance of AC ratings and not just one consistent aspect of performance as the general performance factor. Accordingly, several researchers (e.g., Haaland & Christiansen, 2002; Jansen, Lievens, & Kleinmann, 2011) recently suggested the use of interactive theories of personality to understand the interplay of person and situation variables in ACs (see also Lievens, Tett, & Schleicher, 2009). Trait Activation Theory (Tett & Burnett, 2003) is one of these theories. It suggests that a situation may trigger certain trait-related behaviors if it provides trait-relevant signals for the individual to do so. For example, if a situation demands candidates to interact with other people, then it may trigger behavior that is related to sociability (Reis, 2008). Furthermore, it is possible that a given AC exercise may trigger specific traits that are related to different targeted dimensions (Haaland & Christiansen, 2002; Lievens, Chasteen, Day, & Christiansen, 2006; Lievens et al., 2009; Melchers, Wirz, & Kleinmann, 2012). As a consequence, it should not be surprising that within-exercise ratings of these dimensions are correlated with one another due to their connection to the same underlying traits. On the other hand, as pointed out by Lievens et al. (2009) and by Melchers et al. (2012) more general dimensions like leadership, for example, may be related to a broader range of traits as opposed to narrower dimensions, like short-term planning. They may therefore be more often triggered by different cues in various situations than a narrower dimension.

In part because of this reason and in connection with the successful modeling of broad dimensions in the structure of multisource performance ratings (Hoffman, Lance, Bynum, & Gentry, 2010), Hoffman et al. (2011) proposed to group together similar AC dimensions to represent broader constructs and thus introduced a novel model of AC ratings. Accordingly, their model (Model 5) includes broad dimension factors in addition to a general performance factor and the exercise factors (J-broad dimensions, K-exercises, and 1-general performance

factor). The broad dimensions in this conceptualization are seen as latent factors underlying categories of similar dimensions, which are conceptualized as indicators of these latent factors. Hoffman et al. tested this model and found that it provided a significantly better fit of the structure of AC ratings than all formerly suggested models. Thus, when dimensions were modeled in a way that took the similarity between them into account then it was possible to find evidence for dimension factors in ACs.

However, despite these initial promising results, the generalizability of this new structure of AC ratings still needs to be explored more extensively. Thus, the proposed model should be tested in other contexts.

### **Criterion-Related Validity of AC Factors**

For two samples for which criteria data were available, Hoffman et al. (2011) found that broad dimension factors contributed to the criterion-related validity of the AC. In one sample, broad dimensions correlated significantly with salary growth, while neither the general performance factor nor exercise factors did. In the other sample, broad dimensions and exercise factors were significantly related to supervisor ratings of job performance, while again the general performance factor was not. Finally, in both samples, broad dimensions explained incremental variance in job performance over and above exercise factors and the general performance factor.

These findings somewhat challenge results from previous research that found that the general performance factor in Model 4 (1-general factor, K-exercises) significantly contributed to criterion variance (Lance et al., 2000; Lance, Foster, Gentry, & Thoresen, 2004). One possible reason for the diverging findings concerning the criterion-related validity of the general performance factor is that previous results by Lance and colleagues reflect the effects of unmodeled broad dimension factors and not the general performance factor per se. Or said differently, it is possible that in prior studies the variance that was due to broad

dimensions might erroneously have been attributed to the general performance factor when no broad dimension factors were modeled.

However, before the relevance of the general performance factor for criterion-related validity can be disputed in general, its contribution needs to be evaluated in different studies because it seems surprising that the general performance factor – a factor that has a consistent positive effect on AC performance across all exercises – is not a significant predictor of actual performance criteria. Furthermore, given support for a general performance factor in job performance ratings (Viswesvaran, Schmidt, & Ones, 2005) and given that ACs are designed to measure valid samples of performance, some correspondence between the general performance factor in an AC and performance on the job is expected. Thus, the second aim of the present research was to explore the criterion-related validity of AC factors more extensively. Furthermore, it was our goal to examine the relevance of the general performance factor for criterion-related validity. Finally, we also aimed to expand previous findings by including performance criteria, like training performance, that are different from criteria that were previously studied.

### **Nomological Network of AC Factors**

Hoffman et al. (2011) also found some evidence for the construct-related validity of broad dimension factors by undertaking the first steps to examining the nomological network of these factors. Examining the relationships of the proposed underlying constructs of a selection procedure with other potentially related external variables, is another approach to determining the construct-related validity of these factors (American Educational Research Association, 2004). In Hoffman et al.'s study, general mental ability (GMA) was partially related to a broad conceptual/administrative skills factor, while conscientiousness was related to an interpersonal skills factor, and dominance was significantly correlated with a leadership factor. These findings advocated the construct-related validity of the broad dimension factors.



Similarly to the criterion-related validity of the general performance factor, findings concerning the nomological embeddedness of the general performance factor seem to be inconsistent. In Hoffman et al.'s (2011) studies, general performance was related to GMA in only one sample and was correlated with conscientiousness in both samples. In contrast, in earlier studies (Lance et al., 2000; Lance, Foster, Nemeth, Gentry, & Drollinger, 2007), general performance was not related to GMA, but was found to be significantly and moderately related to conscientiousness, emotional stability, and openness (Lance et al., 2007). However in this case, it is also possible that the absence of broad dimension factors in the models tested in the earlier studies has led to a misinterpretation of correlates of the general performance factor. Or said differently, variance due to individual differences that is probably characteristic for broad dimension factors might erroneously have also been attributed to the general performance factor in these studies.

Furthermore, information concerning the relationships between exercise factors and individual differences constructs is still rather limited. Hoffman et al. (2011) found that extraversion and conscientiousness were marginally related to an exercise factor associated to a role-play concerning a personnel related request. Furthermore, GMA was related to a leaderless group discussion factor in their study. However, no other individual difference correlates were found for the remaining exercise factors. Thus, more research is needed to evaluate how the latent AC factors relate to other individual difference constructs.

To address the limited knowledge concerning the nomological network of the proposed latent AC factors, the final aim of the present research is to further explore the correlates of the different latent AC factors. Specifically, we will consider the relationships of these factors with individual differences constructs that were already considered in previous studies, such as the Big Five factors of personality and GMA. Furthermore, we will also consider additional constructs that were not included in previous research. These additional constructs were the core self-evaluations constructs, self-worth, self-efficacy, and locus of

control, as well as positive and negative affectivity. The three core self-evaluations constructs are important work-related variables due to their relationships with job satisfaction and job performance (see Judge & Bono, 2001, for meta-analytic evidence). Furthermore, positive and negative affectivity are also variables that are critical for job performance due to their relationships with task performance and organizational citizenship behaviors (see Kaplan, Bradley, Luchman, & Haynes, 2009, for meta-analytic evidence).

## **Method**

### **Sample**

The sample consisted of 936 participants of an assessment center used to select career officers for the Swiss Armed Forces. The applicants were reserve officers who were interested in becoming fulltime military career officers. Those who passed the AC were granted training at the Swiss military training academy before they were employed fulltime. The mean age of the candidates was 27 years, with a range from 19 to 43. The candidates' educational backgrounds varied from apprenticeship to university degree.

### **Procedure and the Assessment Center**

The AC was similar to ACs that adhered to current standards (International Task Force on Assessment Center Guidelines, 2009) and was shown to have good validity for predicting future training and job performance, as well as career advancement (Gutknecht, Semmer, & Annen, 2005; Melchers & Annen, 2010).

The AC consisted of the following six exercises: a) a short oral presentation, in which candidates had to give a short talk about themselves and an appointed topic, b) a leaderless group discussion, in which candidates were assigned to enforce their own interests and to represent the interests of the group simultaneously in a group task, c) a motivational talk, that inquired participants to motivate a role player to perform an unpleasant task, to accept a situation or to not give up in a problematic situation, d) a debate, in which participants were

assigned to either a pro or a con group and then had to convince the other group of their position, e) a set of short cases, which consisted of different problematic situations that could occur in everyday military life and required candidates to describe how he or she would react, f) a lecture on a topic of military pedagogy, which had to be prepared by the candidates during their free time between the AC exercises on the basis of provided materials.

Following each exercise, every candidate was rated on three to six relevant dimensions with a four point scale ranging from 1 (clearly failed to meet requirements) to 4 (clearly exceeded requirements). These were personal attitude (e.g., self-confident manner, able to deal with own emotions), achievement motivation (e.g., showing commitment and persistence), analysis and planning (e.g., structured and purposeful way of handling and explaining situations), dealing with conflicts (e.g., recognizing conflict potential, offering consensual solutions), influencing others (e.g., being able to convince/motivate others, to present good arguments), social contact (e.g., being able to work in a team, facing others with openness), and oral communication (e.g., being able to express oneself clearly).

Data were collected over a period of 17 years from 1993 until the end of 2009. The ACs took place three times a year and approximately 30 candidates took part in each administration. Over the years, questionnaires that assessed the individual differences constructs that were relevant for the present study were successively included in the AC. Specifically, GMA was measured starting from 1996, the Big Five were assessed starting from 2000, a questionnaire measuring positive and negative affectivity and the core self-evaluations was included in 2003. The candidates received a questionnaire that assessed the individual differences constructs in the introduction phase of the AC and were inquired to fill it out during their free time between the exercises. They were asked to fill out the questionnaire as honestly as possible. They were also told that the results of the personality questionnaires would solely be used for research purposes.

## Criterion Variables

On average, data on criteria were collected 3.17 years after the AC for candidates who completed a three-year Bachelor course and 1.30 years for candidates who completed a one-year-course (see below). Because the different courses employed different scales, the final grades were standardized within each curriculum before the analyses. Two different criteria were used, academic training performance and military training performance.

***Academic training performance.*** The first criterion was the candidates' later academic performance at the military academy and it was operationalized as the final course grade of the academic training course. This final course grade was available for a total of 500 candidates. Depending on their previous qualifications, candidates who succeeded in the AC either attended a three-year Bachelor course at the military academy (candidates who had A-levels), a one-year diploma course (candidates who already had a university degree) or a one-year Military School course (candidates who had completed an apprenticeship and were experienced and qualified militia officers). The final course grades comprised various grades from written exams during the military academic courses and the grade from the bachelor's thesis. The course teachers had no knowledge of the former candidates' AC results. The results were provided only to the candidates and to the administrating officer of the human resources department of their arms unit.

***Military training performance.*** The candidates' later military performance was used as the second criterion. This variable stems from the practical military training that the participants completed in the periods between their academic courses. Each year the participants were usually evaluated by their direct military supervisors with regard to their general behavior as an officer (e.g., their attitude, motivation, and communication) as well as their performance in specific military training (tactics, staff procedures, and combat training). Furthermore, the supervisors also rated the participants' overall performance on an additional single item. All performance ratings were made on a scale ranging from 1 (worst) to 5 (best).

For the present study, we used the mean of these ratings including the overall rating at the end of the military training ( $n = 514$ ). The military training supervisors had no information about the candidates' AC scores. The one-year retest-reliability of this overall performance rating was .63 (determined on the basis of candidates from the Bachelor course who were rated repeatedly each year during their course).

### **Individual Difference Variables**

**GMA.** Each participant completed three written cognitive ability tests additionally to the AC as one of the AC exercises. These measured verbal, numerical and abstract non-verbal reasoning. The first test measured the candidates' understanding of short but complex texts. In the second test, the candidates had to analyze tables and graphs in order to answer questions related to each table or graph. In the third test, candidates had to derive the rule behind a series of four diagrams and then determine a corresponding fifth diagram that was missing. In the present study, the candidates' mean across the three tests was used as an indicator of their GMA. The tests were purchased from an international consulting firm that had developed and pre-tested them. According to the manual, the internal consistencies were .75, .81, and .80 for the verbal test, numerical and reasoning tests, respectively. The tests were previously shown to have (uncorrected) validities between .21 and .28 for predicting overall job performance (SHL, 2006).

**Big Five.** The Big Five personality traits were assessed with a shortened version of the minimal redundant scales (Ostendorf, 1990) by Schallberger and Venetz (1999). These scales measure personality traits with four paired adjectives each (e.g., Neuroticism: emotionally stable – unstable, Extraversion: sociable – withdrawn, Conscientiousness: orderly - unordered, Openness to experience: creative - uncreative, Agreeableness: good natured – short-tempered). The paired adjectives were presented as two end-points of a scale from 1 to 6 and the candidates were required to rate if they were closer to one or the other of the paired adjectives. The internal consistencies of these scales were .60 for Emotional stability, .74 for

Extraversion, .77 for Conscientiousness, .75 for Openness, and .43 (and .54 after excluding 2 items) for Agreeableness.

***Positive and negative affectivity.*** A shortened and modified version of the Positive and Negative Affect Scale (PANAS) originally developed by Watson, Clark, and Tellegen (1988) was used in the AC. This version was developed on the basis of the German translation of the PANAS scale by Krohne, Egloff, Kohlmann, and Tausch (1996) and was modified by Schallberger (2005) to measure these dimensions with eight bipolar items. In this eight-item version, four adjective pairs measured positive affectivity (e.g., bored – enthusiastic), while another four measured negative affectivity (e.g., relaxed – stressed). Similar to the Big Five scales used, candidates had to indicate on a scale from 1 to 6 which adjective corresponded with their personality to a greater extent. The internal consistencies of the scales were .79 for positive and .66 for negative affectivity.

***Locus of control and self-efficacy.*** A questionnaire by Krampen (1991) was employed to measure locus of control (e.g., “If I have an accident or not, depends entirely on me and my behavior”) with eight items and self-efficacy (e.g., “Even in difficult situations I always come up with ideas about what can be done”) with four items. The items had to be rated on 6-point Likert scales from 1 (= *I absolutely disagree*) to 6 (= *I absolutely agree*). The internal consistency was .61 for the locus of control scale and .69 for self-efficacy.

***Self-esteem.*** Self-esteem was measured with Badura’s (1987) 10-item German translation of a scale by Rosenberg (1965). The items (e.g., „Sometimes I really feel worthless“) were rated on a 5-point Likert scale ranging from 1 (= *I strongly disagree*) to 5 (= *I strongly agree*). The internal consistency of this scale was .67.

## **General Method**

***CFA analyses.*** We used AMOS 18.0 (Arbuckle, 2009) to conduct confirmatory factor analyses to evaluate the five models described above. For models that included (either narrow or broad) dimensions, these dimensions were allowed to correlate with each other. Similarly,

for models that included exercise factors, these factors were allowed to correlate with one another. However, dimension factors, exercise factors and the general performance factor were conceptualized as being uncorrelated with each other. Also, uncorrelated error terms were assumed for the PEDRs.

Several criteria were used as indicators of the goodness of fit of a model. First, the model had to converge to a proper solution (i.e., minimalization was successful, standardized model parameters did not exceed the absolute value of 1.00 etc.). Second, the models were evaluated according to the  $\chi^2$  statistic, the standardized root mean squared residual (SRMSR), the root mean squared error of approximation (RMSEA), the comparative fit index (CFI), and the Tucker-Lewis index (TLI).  $\chi^2$  is an index of absolute fit where smaller values indicate a better fit of the model (Hu & Bentler, 1999). SRMSR is approximately the squared absolute mean of all residual correlations and indicates a good model fit when it is lower than .08 (Hu & Bentler, 1999). The RMSEA estimates the discrepancy between the model fit and the data due to error of approximation, with values below .06 indicating a close fit (Hu & Bentler, 1999). The CFI refers to the proportionate improvement of fit when the target model is compared with a more restricted baseline model (also referred to as incremental fit index), usually a null model with uncorrelated latent variables. A  $CFI \geq 0.95$  is indicative of good fit (Hu & Bentler, 1999). The TLI is also an incremental fit index that includes penalty features for including freely estimated parameters that do not improve model fit (Brown, 2006). Values close to .95 are considered acceptable (Hu & Bentler, 1999). Finally,  $\Delta\chi^2$ -tests were conducted to determine whether the improvement in model fit between competing models was significant.

***Broad dimension factors.*** To determine the underlying broad dimensions of the given AC, we tried different combinations of the measured dimensions by assuming that PEDRs of similar dimensions load on one latent factor. We classified the manifest dimensions into broad dimensions by taking their similarity with each other into account and also by considering

three previously proposed dimension taxonomies. The first taxonomy consisted of two broad general broad categories by Shore, Thornton, and Shore (1990) who suggested that PEDRs could be differentiated into a Performance style dimension, which should be more strongly related to ability measures, and an Interpersonal style dimension. The second taxonomy consisted of four broad higher-order categories that were determined on the basis of sorting 187 dimensions of managerial performance into categories (Borman & Brush, 1993). These categories were Interpersonal dealings and communication, Leadership and supervision, Technical activities and the “mechanics of management” (e.g., planning and organizing, problem solving etc.), and Useful personal behavior and skills (e.g., persistence, resilience, organizational commitment etc.). Finally, Arthur et al. (2003) collected a large number of dimensions from previous AC research and derived a set of seven categories to categorize nearly all dimensions. These seven dimensions were Consideration/awareness of others, Communication, Drive, Influencing others, Organizing and planning, and Problem solving. Because not all manifest dimensions were easily classified into one of these broad categories, we tried different combinations and then chose the best solution in terms of model admissibility and correspondence with existing taxonomies for our Model 5.

***Relationships with external variables.*** After the best fitting model was identified, we estimated the relationships between the AC factors and externally assessed variables. Similarly to Hoffman et al. (2011) and Lance et al. (2000), we fixed the AC parameter values to the estimates from the CFA and then separately included the external variables (one indicator per variable) to the model to estimate their correlations with the latent factors. The indicator factor loading for each of the external variables was fixed to 1.00 and the respective uniqueness was set to 0.



## Results

### CFA analyses

In accordance with prior research (Lance et al., 2000; Lance, Lambert et al., 2004), Model 4 (6-exercises, 1 general performance factor) converged to a solution that fit the AC ratings best in comparison to the other traditional models (Models 1 to 3, cf. Table 1) and showed a good fit according to all fit indices. Moreover, Model 4 demonstrated a significantly better fit than Model 3 (6-exercise factors only), which also converged to a proper solution,  $\Delta\chi^2 = 125.01, p < .001$  (Table 1). Expectedly, Model 1 (7-dimension) and Model 2 (6-exercise, 7-dimension) failed to converge to a proper solution.

For Model 5, a conceptualization with three broad dimensions seemed most appropriate in terms of admissibility and correspondence of the broad dimension factors with existing taxonomies (e.g., Arthur et al., 2003; Borman & Brush, 1993; Shore et al., 1990). This model used the following specification of broad dimensions: interpersonal skills (personal attitude, dealing with conflicts, social contact, oral communication), drive (achievement motivation) and strategic skills (influencing others, analysis and planning). With this specification of Model 5 as a 6-exercises, 3-broad dimensions, 1-general-performance-factor model, the model was admissible and provided a close fit to the data (cf. Table 1). Furthermore, as in Hoffman et al.'s (2011) study, Model 5 also had a significantly better fit than Model 4,  $\Delta\chi^2 = 113.03, p < .001$ . The standardized parameter estimates and the proportion of variance accounted for by broad dimensions, the general performance factor, and the uniquenesses can be found in Table 2. Furthermore, the intercorrelations between the latent AC factors are presented in Table 3.

Table 1

*Confirmatory Factor Analysis Model Goodness-of-Fit Statistics*

<b>Model</b>	<b>admissible</b>	<b>df</b>	<b><math>\chi^2</math></b>	<b><i>p</i></b>	<b><i>SRMSR</i></b>	<b><i>RMSEA</i></b>	<b><i>CFI</i></b>	<b><i>TLI</i></b>	<b><math>\Delta\chi^2</math></b>
Model 1 7 dimensions	no <sup>1</sup>	278	3378.809	.000	.0947	.114	.601	.534	
Model 2 6 exercises , 7 dimensions	no <sup>2</sup>	237	.000			.166	1.000		
Model 3 6 exercises	yes	284	534.545	.000	.0357	.032	.968	.963	
Model 4 6 exercises, 1 dimension	yes	258	410.533	.000	.0260	.026	.980	.975	vs. Model 3: 125.01**
Model 5 6 exercises, 3 broad dimensions, 1 general performance factor	yes	229	297.504	.002	.0226	.019	.991	.987	vs. Model 4: 113.03**

*Note.* SRMSR = standardized root mean squared residual; RMSEA = root mean squared error of approximation; CFI = comparative fit index; TLI = Tucker-Lewis Index.

<sup>1</sup> = model not admissible due to a not positive definite covariance matrix.

<sup>2</sup> = model unidentified.

\*\*  $p < .001$

Table 2

*Standardized Parameter Estimates for Model 5*

<i>PEDR</i>	<i>Exercise factors</i>					<i>Broad dimensions</i>				<i>GP</i>	<i>Unique</i>
	SOP	LGD	MOT	SHC	DEB	PRE	INT	DRI	SS		
ACH_SOP	0.60*							0.12		0.40*	0.13*
ANP_SOP	0.53*								0.27*	0.39	0.11*
COM_SOP	0.39*						0.12			0.54*	0.11*
PER_LGD		0.67*					0.07			0.28*	0.12*
SCO_LGD		0.62*					0.19*			0.18*	0.15*
COM_LGD		0.53*					0.03			0.41*	0.21*
CFL_LGD		0.62*					0.16*			0.17*	0.07
INF_LGD		0.72*							0.15	0.25*	0.19*
PER_MOT			0.65*				0.28*			0.33*	0.22*
ACH_MOT			0.51*					0.13		0.32*	0.18*
SCO_MOT			0.61*				0.31*			0.16	0.20*
COM_MOT			0.45*				0.26*			0.42*	0.14*
CFL_MOT			0.64*				-0.03			0.26*	0.17*
INF_MOT			0.72*						0.18	0.23*	0.17*
PER_SHC				0.61*			0.18*			0.40*	0.16*
ACH_SHC				0.56*				0.62*		0.27*	0.17*
ANP_SHC				0.69*					-0.03	0.38*	0.17*
SCO_SHC				0.46*			0.10			0.36*	0.15*
CFL_SHC				0.70*			-0.02			0.39*	0.14*
PER_DEB					0.72*		0.09			0.28*	0.22*
SCO_DEB					0.49*		0.29*			0.28*	0.15*
COM_DEB					0.53*		-0.10			0.51*	0.24*
INF_DEB					0.68*				0.11	0.34*	0.17*
ACH_PRE						0.64*		0.12		0.26*	0.26*
ANP_PRE						0.76*			0.12	0.25*	0.19*
COM_PRE						0.54*	0.01			0.42*	0.23*

*Note.* SOP = short oral presentation; LGD = leaderless group discussion; MOT = motivational talk; SHC = short cases; DEB = debate; PRE = lecture on a topic of military pedagogy; INT = interpersonal skills; DRI = drive; SS = strategic skills; ACH = achievement motivation; ANP = analysis and planning; COM = oral communication; PER = personal attitude; SCO = social skills; CFL = dealing with conflicts; INF = influencing others; GP = general performance factor.

\*  $p < .05$ .

Table 3

*Latent factor correlations*

	1	2	3	4	5	6	7	8	9	10
1. SOP	1									
2. LGD	0.34*	1								
3. MOT	0.22	0.29*	1							
4. SHC	0.13	0.28*	0.19*	1						
5. DEB	0.20	0.37*	0.28*	0.22*	1					
6. PRE	0.24	0.25*	0.14	0.26*	0.25*	1				
7. INT	0.00	0.00	0.00	0.00	0.00	0.00	1			
8. DRI	0.00	0.00	0.00	0.00	0.00	0.00	0.44	1		
9. SS	0.00	0.00	0.00	0.00	0.00	0.00	0.32	0.55	1	
10. GP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1

*Note.* SOP = short oral presentation; LGD = leaderless group discussion; MOT = motivational talk; SHC = short cases; DEB = debate; PRE = lecture on a topic of military pedagogy; INT = interpersonal skills; DRI = drive; SS = strategic skills; GP = general performance factor.

\*  $p < .05$ .

### Criterion-Related Validity of the AC factors

**Academic training performance.** We first investigated the relationships between the latent AC factors of Model 5 and later academic training performance (cf. Table 4). The broad dimension factors strategic skills and drive were both moderately positively and significantly related to academic training performance,  $r = .26$  and  $r = .12$ , respectively, both  $ps < .05$ .

Beyond that, the general performance factor was also weakly and significantly related to training performance,  $r = .19$ ,  $p < .01$ , as were the exercise factors, leaderless group discussion, short cases, and lecture factors,  $rs = .11$ ,  $.12$ , and  $.19$ , respectively, all  $ps < .05$ .

We then conducted multiple hierarchical regression analyses using the latent factor correlation matrix as input. We entered the exercise factors in the first step, the general performance factor in the second step and, finally, all broad dimensions in the third step (Table 5).

In Step 1, the exercise factors accounted for a significant amount of criterion variance ( $R^2 = .05$ ,  $p < .01$ ). In Step 2, the general performance factor significantly improved criterion-

related validity over and above the exercise factors ( $\Delta R^2 = .04, p < .01$ ). Finally, the broad dimensions explained incremental variance over and above all the exercises and the general performance factor ( $\Delta R^2 = .07, p < .01$ ). Based on these results, all AC latent factors seem to be important predictors of performance operationalized by academic training performance. Furthermore, together, the multiple  $R$  was .40 and all tested components explained 16% of variance in academic training performance.

Table 4

*Latent factor correlations with external variables*

<i>Correlates</i>	<i>Exercise factors</i>					<i>Broad dimensions</i>				<i>GP</i>
	SOP	LGD	MOT	SHC	DEB	PRE	INT	DRI	SS	
Cognitive ability <sup>1</sup>	.05	-.01	.00	.01	-.06	.03	-.08	.06	.06	.20**
Extraversion <sup>2</sup>	-.11	.06	-.06	.00	-.03	-.07	.07	.07	.16	.16*
Emot. Stability <sup>2</sup>	.08	.04	.03	.05	-.02	.01	.05	.05	.09	.02
Openness <sup>2</sup>	.07	.07	-.02	.00	.06	.02	-.01	-.04	-.07	.04
Agreeableness <sup>2</sup>	.00	.07	.04	.07	.10	.00	.07	-.01	-.02	-.09
Conscientiousness <sup>2</sup>	.09	-.04	.13*	.06	.08	.11	-.04	.00	-.07	-.05
Self esteem <sup>3</sup>	.02	-.05	-.05	.05	.05	.00	.03	-.05	.27*	-.02
Locus of control <sup>4</sup>	-.02	-.08	-.03	-.07	.01	-.01	.10	.02	.38**	-.09
Self efficacy <sup>5</sup>	.05	-.07	.03	.01	.06	.01	-.04	-.08	.35**	.03
PA <sup>6</sup>	-.05	.04	.00	-.05	.01	.01	.07	-.03	.20	.06
NA <sup>6</sup>	-.07	.00	.08	-.02	.05	-.04	-.17*	.03	-.19	-.01
Acad. Training performance <sup>7</sup>	.14	.11*	.10	.12*	.11	.19**	.05	.12*	.26*	.19**
Mil. training performance <sup>8</sup>	.17*	.17**	.07	.13*	.14*	.17**	.06	.15**	.07	.19**

*Note.* SOP = short oral presentation; LGD = leaderless group discussion; MOT = motivational talk; SHC = short cases; DEB = debate; PRE = lecture on a topic of military pedagogy; INT = interpersonal skills; DRI = drive; SS = strategic skills, GP = general performance factor; PA = positive affectivity; NA = negative affectivity; OAR = overall assessment rating.

Data available for <sup>1</sup> = 734; <sup>2</sup> = 733; <sup>3</sup> = 461; <sup>4</sup> = 459; <sup>5</sup> = 460; <sup>6</sup> = 458; <sup>7</sup> = 500; <sup>8</sup> = 514 candidates.

\*  $p < .05$ ; \*\*  $p < .01$ .

Table 5

*Academic and military training performance regressed on the latent AC factors*

	$\beta$	$R^2$	$\Delta R^2$
<b>Academic training performance</b>			
Step 1		.05**	.05**
Short oral presentation	.05		
Leaderless group discussion	.01		
Motivational talk	.03		
Debate	.04		
Short cases	.05		
Lecture	.14**		
Step 2		.09**	.04**
General performance	.19**		
Step 3		.16**	.07**
Interpersonal skills	-.03		
Drive	-.04		
Strategic skills	.30**		
<b>Military training performance</b>			
Step 1		.08**	.08**
Short oral presentation	.08		
Leaderless group discussion	.08		
Motivational talk	-.02		
Debate	.05		
Short cases	.04		
Lecture	.19**		
Step 2		.12**	.04**
General performance	.20**		
Step 3		.14**	.02**
Interpersonal skills	-.01		
Drive	.18*		
Strategic skills	-.03		

\*  $p < .05$ ; \*\*  $p < .01$ .

**Military training performance.** We found that the broad dimension factor drive was significantly related to military training performance ( $r = .15, p < .01$ ) as was the general performance factor ( $r = .19, p < .01$ ). Furthermore, almost all exercise factors had significant

criterion-related validity (short oral presentation:  $r = .17$ , leaderless group discussion:  $r = .17$ , short cases:  $r = .13$ , debate:  $r = .14$ , lecture:  $r = .17$ , all  $ps < .05$ ).

In Step 1 of a hierarchical regression analysis that used the exercise factors as input, all exercise factors together contributed significantly to criterion variance ( $\Delta R^2 = .08$ ,  $p < .001$ ). In Step 2, the general performance factor had incremental validity beyond the exercise factors ( $\Delta R^2 = .04$ ,  $p < .01$ ), and in the last step, the broad dimensions explained incremental variance over and above the exercise factors and the general performance factor ( $\Delta R^2 = .02$ ,  $p < .01$ ). The multiple  $R$  for all latent factors together was .38.

### **Nomological Network of AC factors**

Concerning the nomological network of the broad dimension factors, the interpersonal skills factor was neither correlated with GMA, the Big Five nor the core self-evaluations. However it was only weakly and significantly negatively related to negative affectivity,  $r = -.17$ ,  $p < .05$  (Table 4). Drive was not correlated with any of the individual differences constructs. Strategic skills had moderate positive and significant correlations with all core self-evaluations constructs: self-esteem:  $r = .27$ , locus of control:  $r = .38$ , self-efficacy:  $r = .35$ , all  $ps < .01$ . Furthermore, this broad dimension factor was weakly but not significantly related to extraversion,  $r = .16$ , *ns*, moderately positively but nonsignificantly related to positive affectivity,  $r = .20$ , *ns*, and weakly negatively but also nonsignificantly related to negative affectivity,  $r = -.19$ , *ns*.

The general performance factor was moderately and significantly correlated with GMA,  $r = .20$ ,  $p < .01$ . Furthermore, it was weakly and significantly related to extraversion,  $r = .16$ ,  $p < .01$ .

As regarding the exercise factors, the motivational talk factor was weakly and significantly related to conscientiousness,  $r = .13$ ,  $p < .01$ . Finally, the short oral presentation factor had a weak negative (but nonsignificant) correlation with extraversion,  $r = -.11$ , *ns*, while the lecture factor was nonsignificantly related to this personality trait,  $r = .11$ , *ns*. No

other relationships between the latent AC factors and personality traits were significant or above .10.

### **Discussion**

The main goal of the present study was to evaluate and extend the generalizability of a proposed new model for the structure of AC PEDRs that introduced broad dimension factors as the new latent sources of variance of AC ratings (Hoffman et al., 2011). Furthermore, we determined the criterion-related validity for the different latent AC factors for a set of additional criteria. Finally, we also explored the nomological network of the proposed new AC components.

Our results confirmed that broad dimensions are reflected in PEDRs and that the structure of AC ratings is best characterized by a model involving such broad dimensions in addition to a general performance factor and exercise factors. Apart from this, the current study makes at least three other contributions to the literature. First, we tested the validity of the new AC structure with regard to training performance criteria that have not been tested in previous research on the internal structure of ACs.

Furthermore, we found that all latent AC components of this new AC structure significantly contributed to the criterion-related validity in our sample for both criteria that were considered. This means that not only the exercise factors and the broad dimension factors (as found by Hoffman et al., 2011), but also the general performance factor explained a significant amount of variance in two different criteria and had incremental validity beyond the exercise factors. Concerning the former two sources, this replicates the findings by Hoffman et al. (2011) and can be seen as further evidence for the importance of both, the exercise and the dimension factors as structural components of the AC. Concerning the general performance factor, however, our findings shed more light on the role of the general performance factor because this factor did not significantly contribute to criterion variance in Hoffman et al.'s study. Thus, the present results suggest that the general performance factor



should not generally be dismissed as a factor that may contribute to the AC's criterion-related validity.

One possible reason for the diverging results may lie in the composition of the sample that was tested for the present study. The candidates had very different educational backgrounds ranging from professional apprenticeships to university degrees. Thus, the overall variability in their general performance potential might have been larger than in previous samples which in turn may have had an influence on the covariation of the general performance factor and training performance.

Similarly, different broad dimensions explained significant incremental variance in the two different criteria that were observed. While the broad factor strategic skills significantly contributed to academic training performance, this was not the case for military training performance where the drive factor seemed to be more important for the ratings of candidates by their supervisor. Regarding the impact of exercise factors, the factor related to the lecture exercise emerged as the most important and sole contributor to incremental variance in both criteria on the side of the exercises. In sum, these results reflect that all latent components of the AC structure are important but also varying contributors to criterion-related validity.

Finally, our results concerning the correlates of the different latent factors shed more light on the nomological network of these factors and support their construct-related validity. Although the broad dimensions were not significantly related to the Big Five in our sample, all core self-evaluations constructs, were moderately and significantly related to the broad factor strategic skills. This finding likely reflects that a positive attitude towards oneself, the conviction that one can influence important outcomes and the conviction that one is capable of doing so is important to act in a structured and purposeful manner and to be able to influence others. Judge and Kammeyer-Mueller (2011) point out in their review that individuals who are high in core self-evaluations are more likely to set ambitious goals for themselves, are more persistent and ready to make exceeding efforts in their jobs (Erez &

Judge, 2001), thus, they believe that such individuals would also be effective leaders who set ambitious goals and pass on confidence to their followers. Resick, Whitman, Weingarden, and Hiller (2009) showed that CSE are positively related to transformational leadership that is understood as the most effective leadership form in which leaders address the intrinsic motivation of followers and inspire them to perform beyond their transactional agreements. These findings potentially support the construct validity of this broad dimension factor.

In addition, the broad dimension factors were marginally related to trait affect. Specifically, the interpersonal skills factor was significantly and weakly negatively correlated with negative affectivity. Furthermore, the factor strategic skills had a weak but nonsignificant correlation with positive affectivity and also a moderate but nonsignificant negative correlation with negative affectivity. Although some of these relationships should be treated with caution due to a lack of significance, the general pattern as well as the strength of the relationships make sense. Both of these broad dimensions involve interacting with others where the presence of a positive affect or the absence of negative emotions such as stress and nervousness is helpful in establishing a positive basis for communication and exchange. Some support for this idea can be found in the literature: Rubin, Munz, and Bommer (2005) showed that positive affectivity was a relevant predictor of transformational leadership and George (1992) has linked positive affectivity to positive moods and prosocial behavior. Negative affectivity was thought to influence levels of distress and one's responsiveness to stimuli that generate negative emotions (George, 1992). It seems reasonable that negative emotions might not promote positive interaction and communication behaviors. In sum, these results also can be seen as support for the construct validity of broad dimension factors.

The general performance factor was moderately and significantly related to GMA and extraversion. Both of these results are in line with previous meta-analytic research by Collins et al. (2003) who found high correlations between overall assessment ratings on the one hand and GMA and extraversion on the other hand. With regard to GMA, this might be due to the

relatively large variability of GMA in this particular sample that was due to the diverse educational backgrounds of the candidates ranging from apprenticeships to university degrees. And concerning extraversion, it is likely that higher levels of extraversion were helpful throughout all exercises of the AC as all exercises involved interacting with others or presenting information or ideas to others. Thus the ability to present oneself and to approach others openly as it would be associated with extraversion could have generally led to better ratings in the AC.

With one exception, the exercise factors were not significantly correlated with any of the individual differences constructs. Only the motivational talk factor was weakly positively and significantly related to conscientiousness. It is plausible that own high level of conscientiousness may be helpful in an exercise where one should motivate another person to do an unpleasant task. A person who is very conscientious may more easily find arguments to do something that may not be pleasant but necessary. Yet, taken together, the almost absence of correlations between the exercise factors and individual differences constructs is not surprising, since exercise effect should rather reflect situationally specific knowledge and performance and not individual difference constructs that are consistent across situations. Thus, taken together, our findings provide further evidence for the superiority of the mixed-model relative to the traditional AC models and they also provide support for the assumed presence and relevance of performance dimensions in AC PEDRs.

### **Limitations and Implications for Future Research**

Although the findings of the present study and the studies by Hoffman et al. (2011) advocate the new model of the underlying structure of PEDRs from ACs, there is still a need for more rigorous tests to determine the generalizability of this model. Specifically, the particular conceptualizations of the different broad dimension factors in the present study as well as in Hoffman et al.'s samples were not conceptualized as such during the construction of the ACs but were always introduced post hoc. Thus, an even stricter test of the new

conceptual structure should evaluate whether a priorily specified broad dimension factors can also be found in ACs that are explicitly designed according to a hierarchical competency model (cf., Campion, Fink, Ruggeberg, Carr, Phillips, & Odman, 2011) that takes the similarity of the different narrow dimensions into account and groups them together beforehand to measure certain broad dimensions. Such a test would allow additional conclusions about the practical value of the present findings with regard to their usefulness for AC construction, candidate feedback, and finally for the construct-related validity of ACs.

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## Chapter 2

### Effects of Individual Differences on Applicant Perceptions of an Operational Assessment Center

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### **Abstract**

Knowing to what extent applicant reactions are related to stable individual differences and not only to characteristics of a selection procedure is important for the design and administration of the procedure and for dealing with candidates. The aim of this study was to explore relationships between individual differences (Big Five, core self-evaluations, trait affectivity, and general mental ability) and applicants' perceptions of an operational assessment center. Data from 313 candidates revealed that individual difference variables explained significant variance in applicant perceptions of the AC, even after controlling for self-rated and actual performance. Based on these results, the nature of the applicant pool should be considered for designing selection procedures, dealing with applicants and for research purposes.

Applicant reactions to selection procedures can have a substantial impact on organizations. For example, applicant perceptions during selection procedures have been shown to affect important outcomes like the intentions to accept a job offer, to recommend the organization to others, or to pursue legal action (see Truxillo & Bauer, 2011, for an overview). Furthermore, it is also assumed that applicant perceptions are related to later applicant behavior such as job performance, turnover, or even buying the company's products (cf. Hausknecht, Day, & Thomas, 2004). For this reason, various studies have been dedicated to aspects of selection procedures that are potentially relevant for applicant perceptions. This research has provided important insights on how different selection instruments are perceived by applicants (e.g., applicants' preference for interviews and work-sample tests over personality tests; Anderson, Salgado, & Hülshager, 2010) or what organizations can do to influence applicant perceptions and their outcomes favorably (e.g., provide applicants with explanations or information about how the selection procedure relates to the targeted job; cf. Hausknecht et al., 2004; Ryan & Huth, 2008; Truxillo & Bauer, 2011).

In addition to aspects of the selection procedure, it has also been suggested that dispositional variables can affect applicant perceptions of selection procedures (Hausknecht et al., 2004; Ryan & Ployhart, 2000). If dispositional factors account for applicant perceptions, this could mean that some applicants may react negatively to selection experiences regardless the organization's efforts to optimize their selection procedures (Truxillo, Bauer, Campion, & Paronto, 2006). However, if knowledge of the potential applicant pool is available, as may especially be the case for internal applicants, such information can help in making choices about how to design a selection process so that it suits the needs of the specific candidates.

Despite repeated calls for research on the role of individual difference variables for applicant perceptions (Ryan & Ployhart, 2000), few studies have addressed why certain applicants perceive selection procedures differently. Furthermore, the individual differences tested seldom go beyond the Big Five or GMA, and many of these studies used student

samples (e.g., Bernerth, Field, Giles, & Cole, 2006; Ostrom, Born, Serlie, & van der Molen, 2010; Wiechmann & Ryan, 2003). However, there is meta-analytical evidence that perceptions of selection procedures differ between students in simulated selection settings and real applicants (Truxillo, Bodner, Bertolino, Bauer, & Yonce, 2009).

Although organizations may have more information about individual differences of their current employees, internal candidates have been relatively neglected in applicant reactions research (Ford, Truxillo, & Bauer, 2009). However, these applicants' reactions may even be of more importance to organizations, because internal candidates usually remain in the organization even if they have not been selected for a promotion or a further position. Furthermore, they have already invested a lot of time and effort in their organization and may react more sensitively to their employers' selection practices. Therefore, their reactions could dramatically affect important organizational outcomes (Ford et al., 2009). Despite the importance of understanding internal applicants' reactions to selection procedures, hardly any research has been done with this group of candidates (Ford et al., 2009).

Finally, there is no information to date about how individual differences affect candidates' reactions to assessment centers (ACs). Studies have shown that applicant perceptions may differ depending on the selection procedure (Ostrom et al., 2010; Ryan & Ployhart, 2000). This finding means that results from previous studies concerning the relationships between dispositional variables and applicant perceptions may not generalize to ACs. Furthermore, because ACs are widely used for selection of external candidates as well as for promotion and development of internal candidates (Krause & Thornton, 2009), more information regarding applicants' perceptions of ACs is needed.

For this reason, one goal of the present study was to explore the role of a broad range of dispositional variables (personality and general mental ability) for applicants' perceptions of an operational AC. Furthermore, our aim was to include applicant perceptions that have not been considered in previous studies and that are potentially relevant for selection procedures



based in work simulations. Finally, in our study, we explored the relationships between dispositional variables and applicant perceptions in a sample that did not consist of external applicants but of candidates that were already members of the selecting organization. Therefore, the present research also helps to gather evidence on the reactions of an important group of candidates that has received only scant attention in the past.

### **Applicant Reactions**

In this section, we will briefly review theoretical approaches to applicant reactions and give an overview of studies involving individual differences and applicant reactions. In the next section, we will then discuss the individual difference constructs that we believe to be relevant for applicant reactions.

In light of the growing awareness of applicants' views on selection, several theoretical frameworks have been suggested that specify different determinants of applicant reactions, which are an overall term for various perceptions, attitudes, affects, or cognitions that an individual might have during the hiring process (cf. Ryan & Ployhart, 2000; Truxillo & Bauer, 2011). The most important framework was proposed by Gilliland (1993) who introduced a model of applicant reactions to selection procedures that is based in organizational justice theory. This model defines a set of ten justice rules (job relatedness, opportunity to perform, reconsideration opportunity, consistency of administration, feedback, selection information, honesty of test administrators, interpersonal effectiveness of administration, two-way communication, and the propriety of questions) that determine the perceived fairness of selection procedures. It has been proposed that the perceived fairness of selection procedures influences later selection outcomes, like applicants' intentions, attitudes and behaviors. According to the model, negative outcomes result if the justice rules are violated. Most of the applicant reactions research during the last two decades has applied this model (Truxillo & Bauer, 2011) and some but not all of Gilliland's (1993) rules were shown

to be relevant for later outcomes of applicant reactions (especially job relatedness and opportunity to perform; Truxillo, Bauer, & Sanchez, 2001; Schleicher, Venkataramani, Morgeson, & Campion, 2006).

Another approach to applicant reactions has focused on the social validity of the selection process. In other words, on the components that make selection situations socially acceptable (Schuler, 1993). The concept of social validity has been developed independently from the organizational justice perspective. It suggests that four aspects of the selection process influence applicants' acceptance of this process and characterize selection situations that are perceived as open, fair, respectful, and rational (Schuler, 1993). These four aspects are: a) the information that participants receive about the job itself and characteristics of the organization; b) the candidates' participation in the development of the selection procedure or the amount of control they may exert over the selection situation; c) transparency of the selection procedure and the decision process; and d) the content and form of feedback that they are given (Schuler, 1993). Moreover, the social validity perspective also emphasizes the importance of the strain that applicants experience during a selection procedure for their reactions to this procedure (Kersting, 2010; Schuler, 1990, 1993).

From a third perspective, Arvey and Sackett (1993) proposed that the perceived fairness of the selection process is determined by the selection system content (e.g., job relatedness, fakability), candidates' perception of the development process of the selection procedure (e.g., adequacy of job analysis), the administration of the selection procedure, and the organizational context (e.g., selection ratio).

The theoretical approaches suggested by Schuler (1993) and by Arvey and Sackett (1993) did not generate as much research as the model presented by Gilliland (1993), perhaps because the latter was based on a much richer theoretical framework, namely, organizational justice. However, they draw attention to additional aspects that are important for applicant reactions that may not correspond with specific justice rules in Gilliland's model.

Furthermore, because applicants seem to prefer selection methods (e.g., interviews) that they also consider as less fair, it has been suggested that justice theory may not capture the whole spectrum of factors that influence applicant reactions (Ryan & Ployhart, 2000; Rynes, 1993). Some additional aspects, such as perceived strain or perceived control during selection (Kersting, 2010; Schuler, 1990, 1993), possibly deserve more attention than they have received in the past. For this reason, the second aim of the present research was to also include aspects of selection procedures that have not received much attention in the past. In this study we focus in particular on applicant perceptions of aspects that were found to be relevant for ACs (Kersting, 2010). These are perceived face validity, perceived measurement quality, perceived controllability, perceived absence of strain, and perceived quality of administration of the selection procedure.

### **Applicant Reactions and Individual Differences**

In contrast to the wealth of research on aspects of selection procedures that can influence justice perceptions, few studies have addressed how individual differences relate to applicant perceptions of selection procedures. However, in line with Truxillo et al. (2006), who stated “what may seem fair to some applicants (e.g., extraverts), may not seem fair to others (e.g., introverts)” (p. 276), a given aspect of a selection procedure can be perceived very differently by different applicants. Therefore, knowing which applicants are likely to react in a given way can potentially help organizations to better respond to their applicants’ needs in the process of designing a selection procedure, and in generally dealing with candidates.

Information about the nature of the candidate pool can already be available, as is the case with internal candidates. There is also evidence for the existence of job-specific applicant pools (Ones & Viswesvaran, 2003) that include individuals with certain defining characteristics. More specifically, previous findings suggest that individual differences are related to career aspirations, career choice (De Fruyt & Mervielde, 1999), and organizational

choice (Schneider, Smith, Taylor, & Fleenor, 1998). Therefore, information on the impact of individual differences on applicant perceptions is necessary for making choices for how to design a selection process or which factors deserve particular attention while dealing with specific candidates for a specific job.

The few available studies related to individual differences have explored several dispositional variables and their relation to applicant perceptions (see the next section for a more detailed review of previous research). Truxillo et al. (2006) as well as Bernerth and colleagues (2006) found correlations between the Big Five and justice perceptions. Furthermore, Oostrom et al. (2010), found relationships between one aspect of a selection procedure, namely perceived job relatedness, and the Big Five as well as core self-evaluations. Finally, there are studies linking GMA and perceived fairness of cognitive ability tests (Macan, Avedon, Paese, & Smith, 1994; Reeder, Powers, Ryan, & Gibby, 2012).

Even though these studies represent an important first step, some of them have the possible limitation that they used student samples (e.g., Bernerth et al., 2006; Oostrom et al., 2010). As already noted above, there is evidence that reactions to selection procedures differ between students and real applicants in actual selection settings (Hausknecht et al., 2004; Truxillo et al., 2009). Moreover, none of the mentioned studies involved internal candidates. Because these candidates have already invested more time and effort in their organization than external applicants, they should also have a stronger sense of identification with their employer. And according to Lind's (2001) fairness heuristic theory, individuals who identify with an organization react more intensely to injustice in the organization (Ford et al., 2009). This means that internal candidates should show much stronger reactions to selection procedures. For this reason, information about the perceptions of internal candidates is needed.

Furthermore, there is a need to include additional work relevant individual difference variables that have not been subject to research of applicant reactions before, like positive and

negative affectivity. Understanding how trait affectivity interplays with perceptions during selection may yield additional insights into applicant reactions. Moreover, the effects of core self-evaluations should be studied on a broader range of applicant perceptions beyond job relatedness (Oostrom et al., 2010).

Finally, to our knowledge, all previous studies that dealt with individual difference variables focused on applicant perceptions of paper-and-pencil, video-based, or computerized tests. Yet, in contrast to these relatively short selection procedures, ACs take place over one to two days and thus place higher demands on candidates, so that the findings from other selection procedures may not generalize to ACs. Therefore, there is a need for more information on ACs, given that they are also a widely used selection procedure (König, Klehe, Berchtold, & Kleinmann, 2010; Krause & Thornton, 2009).

### **Previously Explored Individual Difference Variables**

First, we address individual differences that have already received some attention in previous research, namely the Big Five and GMA.

#### **Big Five**

Given that personality is related to occupational and organizational choice (Hough & Ones, 2002), and that there is evidence suggesting that candidate pools differ between different occupations or organizations (Ones & Viswesvaran, 2003), broad personality factors like the Big Five are important factors to be considered in applicant reactions research. Bernerth et al. (2006) found that agreeableness and openness to experience were weakly related to procedural justice perceptions of personality tests in a student sample. Also in a student sample, Oostrom et al. (2010) found that agreeableness, emotional stability, and openness to experience correlated with perceived job relatedness of a cognitive ability test. Furthermore, exploring the relationships between the Big Five and perceived job relatedness of a situational judgment test (SJT), these authors only found a significant relationship with

openness. Similarly, Truxillo et al. (2006) found significant relationships between agreeableness, emotional stability, and openness to experience with justice perceptions of a written multiple-choice selection test used to select police recruits.

Based on the results of the aforementioned studies within the applicant reactions field we expect that, first, agreeableness will be related to applicant perceptions of the AC. Specifically, individuals who are high in agreeableness should be more compassionate (Judge, Heller, & Mount, 2002) and more sympathetic (Truxillo et al., 2006) towards the administrators of the AC, therefore they should be more inclined to perceive the AC more positively. Second, we expect that conscientious individuals should react more sensitively to ACs. Because conscientiousness has been generally found to be related to organizational justice perceptions (Lv, Shen, Cao, Su, & Chen, 2012), we assume that especially conscientious internal candidates who have invested more time and effort in their organization as compared to the less conscientious individuals should show stronger reactions to any perceived injustice during selection. Third, when it comes to experienced strain during the selection procedure, we believe that individuals who are calm and emotionally stable (Judge et al., 2002) should perceive the AC more favorably. Fourth, we expect that extraversion is positively related to applicant perceptions of the AC. Of the Big Five, extraversion is the most important predictor of AC performance (Collins, Schmidt, Sanchez-Ku, Thomas, McDaniel, & Le, 2003). However, there are no studies to date that link extraversion to applicant perceptions of the AC. Furthermore, AC candidates are almost always faced with social interaction tasks that are probably more favorably seen by extraverted than introverted individuals. Finally, fifth, we expect openness to experience to be positively related to applicant perceptions of the AC. Openness was found to be a stable correlate of applicant perceptions in past research. Furthermore, since openness to experience refers to imaginative and curious characters with wide interests (Costa & McCrae, 1992) and may influence how individuals cope with different testing situations (Truxillo et al., 2006), we believe that this

should particularly be the case for the various different situations that candidates face in an AC. Therefore, our first hypothesis is as follows:

Hypothesis 1: a) Agreeableness, b) conscientiousness, c) emotional stability, d) extraversion, and e) openness to experience will be positively related to applicant perceptions of an AC.

### **General Mental Ability**

General mental ability (GMA) is defined as a “very general mental capability that, among other things, involves the ability to reason, plan, solve problems, think abstractly, comprehend complex ideas, learn quickly and learn from experience” (Gottfredson, 1997, p. 13) and that is considered critical in various areas of life (Schmidt & Hunter, 2004). GMA shows positive relationships with a variety of important work related constructs such as job performance, training success (Schmidt & Hunter, 2004), and also with performance in the AC (Collins et al., 2003).

Few studies have explored the extent to which GMA accounts for variance in applicant reactions to selection. GMA was found to be related to perceptions of face validity, predictive validity, and test fairness of a cognitive ability test in student, as well in real applicant, samples (Macan et al., 1994; Reeder et al., 2012) and also to job acceptance intentions (Macan et al., 1994). However, no studies have linked GMA to applicant perceptions of other selection instruments.

It is plausible that GMA is also related to applicant perceptions of an AC. For example, individuals with higher GMA may better cope with the different tasks of the AC and therefore experience less strain during selection. Consequently they should rate the AC more favorably. Furthermore, applicants with higher GMA perform better in ACs (Collins et al., 2003) and also tend to believe they did well in tests (Macan et al., 1994). Because outcome favorability is a consistent predictor of applicant reactions (Macan et al., 1994; Ryan &

Ployhart, 2000), we expect that GMA will be positively related to applicant perceptions of the AC. Our second hypothesis is therefore as follows:

Hypothesis 2: GMA will be positively related to applicant perceptions of an AC.

### **Additional Relevant Individual Difference Variables**

In the following section, we will discuss individual difference variables that have mostly been neglected in past applicant reactions research but that are probably also relevant for applicant perceptions.

#### **Core Self-Evaluations**

Core self-evaluations are understood as the most fundamental evaluations that people give themselves with regard to their own self-esteem, competence, and skills (Judge & Bono, 2001). Four constructs have been identified as the underlying core self-evaluation traits (Judge & Bono, 2001): locus of control, which is the person's conviction that favorable outcomes will result from his own actions rather than those of powerful others (Judge & Bono, 2001), generalized self-efficacy, which refers to an individual's estimation of being able to successfully deal with difficult situations, self-esteem, which is an overall judgment about one's self-worth, and emotional stability, which was already described as one of the Big Five factors. The core self-evaluations can be measured as a one-dimensional construct or as separate dimensions. In the present study, we chose the latter option to get an estimate of the relative importance of the different underlying traits.

Core self-evaluations are important work-related constructs, as they have been shown to be relevant for motivation, performance and job satisfaction (Chang et al., 2011; Judge, Locke, Durham, & Kluger, 1998). It seems plausible that these constructs are also important in selection and are relevant for motivation and performance in selection procedures as well as for satisfaction with the selection process. Furthermore, given that core self-evaluations are significantly related to perceptions of job characteristics (Chang et al., 2011), it is probable



that they also account for variance in applicant perceptions of a selection procedure like an AC, which is designed to measure simulated work behavior.

Moreover, it has been argued in the past that locus of control should be related to applicant perceptions of selection systems. Specifically, according to Applicant Attribution-Reaction Theory (Ployhart & Harold, 2004), individuals who have a tendency to see themselves as responsible for various important results should be less inclined to perceive a selection procedure negatively than those who tend to attest responsibility to others. Oostrom et al. (2010) have provided partial support for these assumptions by showing that core self-evaluations were positively related to perceived job relatedness of a cognitive ability test and an SJT in a student sample.

To our knowledge, no study to date has explored the relationships between core self-evaluations constructs and a broader range of applicant perceptions. Moreover, information with regard to real applicants is still lacking. Therefore, our aim was to determine the effect of the different core self-evaluation constructs, locus of control, self-efficacy, and self-esteem, on applicant perceptions of an operational AC. Based on the aforementioned assumptions and the results from previous studies, we expect that candidates who have a high internal locus of control will also have more positive perceptions of the AC. Furthermore, individuals who are high in self-efficacy and self-esteem should also believe that they can better cope with the tasks of an AC and thus rate the AC more positively. Therefore we hypothesize:

Hypothesis 3: a) Locus of control, b) self-efficacy, and c) self-esteem will be positively related to applicant perceptions of an AC.

### **Trait Affect**

Trait positive affectivity is the disposition to experience positive moods and strong emotional reactions to positive environmental stimuli (Watson, Wiese, Vaidya, & Tellegen, 1999). In contrast, trait negative affectivity is associated with a tendency to experience negative feelings such as fear, distress, and anger. People with high negative affectivity also

think and experience their environment in a negative way. Generally, positive and negative affectivity are conceptualized as two independent dimensions (Watson et al., 1999). This means that, for example, people with low negative affectivity may experience less negative feelings, but this does not have to mean that they are necessarily high in positive affectivity.

To our knowledge, no study has considered trait affect with regard to applicant perceptions. However, knowing the extent to which applicants' predispositions to experience positive or negative moods and strong emotional reactions account for variance in applicant perceptions is important, because if, for example, dispositions to experience negative feelings explain a meaningful amount of variance in applicant perceptions, there may be little the employer can do to affect these perceptions favorably.

There are reasons to believe that positive and negative affectivity are related to applicant perceptions. First, these traits were found to be related to satisfaction with different facets of work (Bowling, Hendricks, & Wagner, 2008). Moreover, Barsky and Kaplan (2007) provided meta-analytical evidence that positive affectivity is positively, and negative affectivity is negatively, related to perceptions of organizational justice. Accordingly, as dispositions like trait affect may predispose employees to interpret or perceive their work environments in a different manner (Munz, Huelsman, Konold, & McKinney, 1996), it seems plausible that these dispositions are also relevant in the perception of selection procedures by candidates. For this reason, we suggest that trait affect will also be related to applicant perceptions. Specifically, we hypothesize that positive affectivity is positively related to applicant perceptions of the AC, while negative affectivity should show negative correlations. Therefore our final hypothesis is as follows:

Hypothesis 4: a) Trait positive affectivity will be positively and b) trait negative affectivity will be negatively related to applicant perceptions of an AC.

## Method

### Sample

Our sample consisted of 313 candidates from an AC for the selection of career officers for the Swiss Armed Forces. Of these, 300 were male and 13 were female. The mean age of the participants was 27 years old, with a range from 19 to 41. The applicants' educational background ranged from apprenticeship to university degree. Prior to the AC, the candidates completed at least one and a half years of training for militia officers and were obliged to work temporarily as officers in the Swiss Armed Forces for one year, on average, to get practical experiences and a realistic job preview. Therefore, similar to internal candidates, they were already very familiar with the organization and had invested a lot of time and effort in the Swiss Armed Forces. Furthermore, to be admitted to the AC, candidates were required to pass physical and language tests. The latter are also obligatory because Swiss career officers are required to speak and write in at least two of the main official languages of Switzerland (i.e., German, French, and Italian). Even if they did not pass the AC, the candidates remained militia officers and were required to work in this role for the Swiss Armed Forces for several weeks per year during several years after the AC (Switzerland has a mixed army system, including military professionals and militia personnel who serve between 8 and 16 months in the first years of their obligatory service and do refresher courses each following year until they are between 33 to 50 years old; see, for example, Stadelmann, 2010, for more information on the Swiss army). The duration of their later assignments as militia officers varied in weeks per year and number of years depending on their later military ranks. In any case, however, the length of the assignments was three or more weeks per year and, on average, candidates had to serve as militia officers for another ten years after the AC. Therefore, taken together, our sample was largely comparable to internal candidates.

## Procedure

The AC was administered in German, French, or Italian, depending on the mother tongue of the candidates. It took place on two days and consisted of the following six exercises: a) an oral presentation, b) a leaderless group discussion, c) two role plays, d) a group debate, and e) a lecture on a topic of military pedagogy. Following each exercise, every candidate was rated on three to six dimensions on a scale that ranged from 1 (= *clearly failed to meet requirements*) to 4 (= *clearly exceeded requirements*). The targeted dimensions were personal attitude, achievement motivation, analysis and planning, social contact, oral communication, dealing with conflicts, and influencing others. Previous evaluations attested to the good criterion-related validity of the AC and also confirmed that there were no subgroup differences between applicants from the different language groups (Gutknecht, Semmer, & Annen, 2005; Melchers & Annen, 2010).

During the AC, participants were required to complete a cognitive ability test as one of the exercises and, in their free time between the exercises, they also completed a questionnaire that included the personality measures. They were told that their scores on the personality questionnaire would only be used for research purposes and would not influence their final AC score or their chances to become career officers. Directly after the AC and before they were informed about having passed or failed the AC, the participants completed a questionnaire concerning their perceptions of the AC and their self-rated performance.

### *Candidates' AC Performance*

Two indicators for candidates' AC performance were used as control variables for later analyses. First, the overall assessment rating (OAR), which was determined as the mean of all the ratings the candidates received on the seven dimensions across all exercises. And second, candidates' self-rated performance, which was measured directly after the AC and before the candidates were informed about having passed or failed the AC by asking them to indicate on one item how well they thought to have performed in the AC compared to other

candidates (e.g., “Compared with other persons in my age group, I believe I did... in the AC”). The scale for this item ranged from 1 (= *very badly*) to 6 (= *very well*).

### ***Applicant Perceptions***

At the end of the AC, candidates filled out a questionnaire that was specifically developed by Kersting (2010) to assess applicants’ perceptions of ACs. This questionnaire considers aspects from the models by Gilliland (1993) and Schuler (1993) that were adapted to the context of ACs, and measures different applicant perceptions concerning the AC. Kersting (2010) conducted a confirmatory factor analysis (CFA) to evaluate whether the different perception dimensions can indeed be supported and received a good model fit for separate but correlated dimension factors. In the context of the present study, we focused on five of these dimensions, each of which was measured with four items: 1) face validity ( $\alpha = .72$ ) (e.g., “I doubt that one can select appropriate employees for this job with the AC”; reverse coded), 2) measurement quality ( $\alpha = .80$ ) (e.g., “The AC allows the exact measurement of differences between participants regarding the characteristics that are assessed in the AC”), 3) controllability ( $\alpha = .69$ ) (e.g., “During the exercises of the AC, I always knew what I had to do”), 4) absence of strain ( $\alpha = .61$ ) (e.g., “The participation in the AC is stressful”; reverse coded), and 5) quality of administration ( $\alpha = .40$  for the original scale, and  $\alpha = .62$  after excluding one item) (e.g., “The AC was well organized”). Six-point scales ranging from 1 (= *strongly disagree*) to 6 (= *strongly agree*) were used for all items.

### ***Individual Differences Variables***

**Big Five.** A shortened version of the minimal redundant scales (Ostendorf, 1990) by Schallberger and Venetz (1999) was used to assess the Big Five. These scales measure the personality traits with four paired adjectives each (e.g., emotional stability: emotionally stable – unstable). The paired adjectives were presented as two end-points of a scale from 1 to 6 and candidates were required to rate whether they considered their personality as closer to one or the other of the paired adjectives. The internal consistencies of these scales were .41 (for the

original scale and .56 after excluding two items) for agreeableness, .78 for conscientiousness, .64 for emotional stability, .76 for extraversion, and .78 for openness.

**GMA.** Three tests developed by an international consulting firm were used to assess GMA. These measured verbal, numerical and abstract non-verbal reasoning (SHL, 2006). The verbal test assessed the understanding of short complex texts. For the numerical test, candidates were required to analyze tables and graphs and answer related questions concerning these tables and graphs. And in the abstract non-verbal reasoning test the candidates were presented with four diagrams for which they were required to determine a corresponding fifth diagram that was missing. According to the manual, the internal consistencies were .75 for the verbal test, .81 for the numerical test, and .80 for the non-verbal reasoning test (SHL, 2006). To determine candidates' overall GMA score, we used their average score across the three tests.

**Core Self-Evaluations.** Separate scales were used to measure the different core self-evaluation dimensions in our study. A questionnaire by Krampen (1991) measured locus of control (e.g., "Whether I have an accident or not, depends entirely on me and my behavior") with eight items, and self-efficacy (e.g., "Even in difficult situations I always come up with ideas about what can be done") with four items. The items had to be rated on 6-point Likert scales (1 = *strongly disagree*, 6 = *strongly agree*). The internal consistency was .63 for the locus of control scale and .72 for self-efficacy. Self-esteem was measured with Badura's (1987) 10-item German translation of a scale by Rosenberg (1965). The items (e.g., „Sometimes I really feel worthless“, reverse coded) were rated on a 5-point Likert scale (1 = *strongly disagree*, 5 = *strongly agree*). The internal consistency of this scale was .70. And emotional stability was already assessed with the Big Five scale.

**Trait Affect.** A shortened and modified version of the Positive and Negative Affect Scale (PANAS, Watson, Clark, & Tellegen, 1988) was used to measure positive and negative affectivity as traits. This version was developed on the basis of the German translation of the

PANAS scale by Krohne, Egloff, Kohlmann, and Tausch (1996) and was modified by Schallberger (2005) to measure these two dimensions with eight bipolar items. Four adjective pairs measured positive affectivity (e.g., bored - enthusiastic), while the other four measured negative affectivity (e.g., relaxed - stressed). On a scale from 1 to 6, applicants had to indicate which adjective described their personality better. The internal consistencies of the scales were .79 for positive and .65 for negative affectivity.

## Results

Descriptive information and correlations between all study variables are presented in Table 1. To test our assumptions, we first analyzed the correlations between the measured variables. Then we conducted hierarchical regression analyses to test whether dispositional variables explain incremental variance in applicant perceptions of the AC over and above self-rated and actual AC performance. Finally, because some of the individual difference variables were intercorrelated, we conducted a relative weight analysis to determine the relative importance of each predictor (Johnson, 2000; LeBreton & Tonidandel, 2008).

To test Hypothesis 1, we analyzed whether the Big Five personality factors were related to applicant perceptions of the AC at the correlational level. Hypothesis 1 was partially supported, as agreeableness, conscientiousness, emotional stability, and extraversion were related to some of the applicants' perceptions of the AC. As expected, agreeableness was significantly related to all perception variables, namely face validity ( $r = .14, p < .05$ ), measurement quality ( $r = .18, p < .01$ ), controllability ( $r = .13, p < .05$ ), absence of strain ( $r = .11, p < .05$ ), and quality of administration ( $r = .14, p < .05$ ). Conscientiousness was only related to measurement quality ( $r = .15, p < .01$ ). Emotional stability was significantly related to controllability and absence of strain ( $r_s = .16$  and  $.17$ , both  $p_s < .01$ ). Furthermore, extraversion was significantly related to controllability and quality of administration (both

$r_s = .12$ , both  $ps < .05$ ). In contrast to our expectations, no significant correlations were found for openness to experience and applicant perceptions of the AC.

To test Hypothesis 2, we examined the relationships between GMA and applicant perceptions in our study. However, no support was found for Hypothesis 2 as GMA was not significantly related to any of the applicant perceptions of the AC.

Hypothesis 3, which stated that the core self-evaluations constructs locus of control, self-efficacy, and self-esteem, would be positively related to applicant perceptions of the AC, was largely supported in our sample. As expected, locus of control was positively and significantly related to all perception variables: face validity ( $r = .19, p < .01$ ), measurement quality ( $r = .26, p < .01$ ), controllability ( $r = .12, p < .05$ ), absence of strain ( $r = .16, p < .01$ ), and quality of administration ( $r = .20, p < .01$ ). Likewise, self-efficacy was significantly related to all perception variables: face validity, measurement quality, controllability, absence of strain, and quality of administration ( $r_s = .24, .19, .27, .24$ , and  $.15$ , respectively, all  $ps < .01$ ). Finally, self-esteem was positively and significantly related to face validity ( $r = .11, p < .05$ ), controllability, absence of strain, and quality of administration ( $r_s = .15, .17$ , and  $.25$ , respectively, all  $ps < .01$ ).

We tested Hypothesis 4 by examining the extent to which positive and negative affectivity related to applicant perceptions of the AC. As expected, both variables were related to applicant perceptions. Positive affectivity was positively and significantly related to face validity, measurement quality, controllability, ( $r_s = .13, .15$ , and  $.13$ , respectively, all  $ps < .05$ ), and quality of administration ( $r = .16, p < .01$ ), while negative affectivity was negatively and significantly related to absence of strain ( $r = -.20, p < .01$ ) and quality of administration ( $r = -.12, p < .05$ ).



Table 1

*Descriptive statistics and correlations between all study variables*

Variables	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1. Age	27.49	3.62	( - )																		
2. GMA	34.71	8.24	-.14*	( - )																	
3. Agreeableness	4.19	0.93	.00	-.08	(.56)																
4. Conscientiousness	4.82	0.65	-.02	-.18**	.06	(.78)															
5. Emotional stability	4.64	0.59	-.14*	.15*	-.02	.07	(.64)														
6. Extraversion	4.42	0.79	-.15**	.02	.07	-.06	.11*	(.76)													
7. Openness	4.08	0.77	.04	-.17*	-.03	.00	.07	.32**	(.78)												
8. Locus of control	4.38	0.47	-.17**	-.03	.15*	.20**	.29**	.10	.18**	(.63)											
9. Self-efficacy	4.63	0.48	-.04	-.01	.07	.20**	.33**	.05	.21**	.34**	(.72)										
10. Self-esteem	4.33	0.39	-.09	-.01	.04	.16**	.48**	.19**	.16**	.32**	.40**	(.70)									
11. PA	5.01	0.53	-.09	-.08	-.03	.34**	.38**	.31**	.26**	.30**	.31**	.38**	(.79)								
12. NA	2.67	0.67	-.03	-.04	-.29**	-.10	-.44**	.02	.04	-.22**	-.25**	-.28**	-.11	(.65)							
13. Face validity	4.56	0.76	-.09	.03	.14*	.08	.05	.07	.07	.19**	.24**	.11*	.13*	-.09	(.72)						
14. Measurement quality	4.66	0.61	-.12*	-.05	.18**	.15**	.02	.09	.07	.26**	.19**	.08	.15*	-.06	.59**	(.69)					
15. Controllability	5.50	0.60	-.02	.05	.13*	.06	.16**	.12*	.02	.12*	.27**	.15**	.13*	-.10	.28**	.32**	(.80)				
16. Absence of strain	3.94	0.77	.11	-.02	.11*	.02	.17**	.10	.05	.16**	.24**	.17**	.05	-.20**	.24**	.14*	.22**	(.61)			
17. Quality of administration	5.74	0.39	-.04	.02	.14*	.07	.11	.12*	.05	.20**	.15**	.25**	.16**	-.12*	.19**	.29**	.32**	.02	(.62)		
18. Self-rated performance	4.29	0.64	.02	.02	.09	.15**	.12*	.08	.04	.07	.10	.18**	.12*	-.12*	.13*	.11	.18**	.17**	.12*	( - )	
19. OAR	2.82	0.24	-.03	.18**	-.04	.02	.02	.22**	.12	-.07	.08	.02	.08	.04	.18**	.05	.10	-.01	-.01	.16*	( - )

*Note.* PA = positive affectivity; NA = negative affectivity; OAR = overall assessment rating; all scales ranged from 1 to 6 with the exception of the self-esteem scale that ranged from 1 to 5.

\*  $p < .05$ , \*\*  $p < .01$ .

Next, we conducted separate hierarchical regression analyses for each of the applicant perception dimensions to examine whether the individual difference variables explained significant variance beyond the applicants' self-rated performance and their actual performance in the AC (Table 2). In these regressions, in which the respective perception dimension served as the dependent variable, we entered self-rated performance and OAR in Step 1 and the individual difference variables in Step 2.

With the exception of perceived quality of administration, the regression analyses showed that individual differences explained significant variance in all applicant perceptions of the AC, even after controlling for self-rated performance and OAR. The values for the change in accounted variance ( $\Delta R^2$ ) by including the individual difference variables in Step 2 were .10 ( $p < .05$ ) for face validity, .11 ( $p < .01$ ) for measurement quality, .12 ( $p < .01$ ) for controllability, .15 ( $p < .01$ ) for absence of strain, and .08 ( $p < .10$ ) for quality of administration. Agreeableness and emotional stability (both  $\beta$ s = .18, both  $ps < .05$ ) were significant predictors of perceived controllability. Locus of control was the strongest predictor for face validity and measurement quality in Step 2 (both  $\beta$ s = .26, both  $ps < .01$ ), while self-efficacy was the main predictor of perceived absence of strain ( $\beta = .25$ ,  $p < .01$ ). Finally, positive affectivity had a significant but negative effect on perceived absence of strain ( $\beta = -.17$ ,  $p < .05$ ). A potential reason for this negative effect could be multicollinearity or suppressor effects. Taken together, individual differences explained significant variance in applicant perceptions of the AC, even after controlling for self-assessed and actual performance in the AC.

Table 2

*Hierarchical regressions and relative weight analyses with self-rated performance, OAR, and individual differences predicting applicant perceptions of the AC*

Variables	Face validity			Measurement quality			Controllability			Absence of strain			Quality of administration		
	$R^2/\Delta R^2$	$\beta$	$rw$	$R^2/\Delta R^2$	$\beta$	$rw$	$R^2/\Delta R^2$	$\beta$	$rw$	$R^2/\Delta R^2$	$\beta$	$rw$	$R^2/\Delta R^2$	$\beta$	$rw$
Step 1															
$R^2$	.03 <sup>a</sup>			.02			.03*			.02			.02		
$\Delta R^2$	.03 <sup>a</sup>			.02			.03*			.02			.02		
Self-rated performance		.07	6.6%		.12	4.5%		.17*	16.0%		.16*	17.6%		.14*	7.7%
OAR		.14*	21.4%		.01	1.4%		.06	4.6%		-.04	0.6%		.01	0.4%
Step 2															
$R^2$	.13*			.13**			.15**			.17**			.10 <sup>a</sup>		
$\Delta R^2$	.10*			.11**			.12**			.15**			.08 <sup>a</sup>		
GMA		.00	0.5%		-.03	1.3%		.03	1.6%		-.03	1.0%		-.04	0.4%
Agreeableness		-.11	11.6%		.14	20.6%		.18*	11.5%		.12	5.7%		.17*	13.0%
Conscientiousness		-.10	1.1%		.02	7.7%		.01	0.7%		.01	1.7%		-.07	0.9%
Emotional stability		-.11	1.4%		-.06	1.6%		.18*	8.1%		.11	8.6%		-.01	2.4%
Extraversion		.00	1.1%		-.01	3.8%		.03	6.4%		.11	4.2%		-.09	6.6%
Openness		-.11	1.1%		-.02	0.8%		-.05	0.8%		.06	0.4%		-.05	0.4%
Locus of control		.26**	17.7%		.26**	35.2%		-.02	3.8%		.04	7.1%		.03	18.9%
Self-efficacy		.10	28.5%		.08	15.8%		.22**	38.2%		.25**	31.3%		-.03	6.6%
Self-esteem		-.03	2.5%		-.07	1.3%		.02	4.0%		.01	7.4%		.06	29.5%
PA		.08	4.2%		.07	4.7%		-.02	2.8%		-.17*	2.6%		.23**	8.0%
NA		-.12	2.3%		.08	1.2%		.13	1.6%		-.08	11.8%		-.03	5.3%

*Note.* OAR = overall assessment rating; PA = positive affectivity; NA = negative affectivity.

<sup>a</sup> Because of rounding to two decimal places, some of the results for  $R^2$  and  $\Delta R^2$  with a value of .03 were significant, whereas others were not.

\*  $p < .05$ , \*\*  $p < .01$ .

Although hierarchical regression analyses are well suited to demonstrate the incremental variance that individual difference variables explain in AC perceptions beyond self-rated and actual performance, they may not capture the individual value added by each of these variables, particularly when some of them are correlated (Johnson, 2000; LeBreton & Tonidandel, 2008). Therefore, we also determined the relative weight or the relative contribution of each predictor to the explained variance ( $R^2$ ) in applicant perception variables (Table 2). The relative weight analysis showed that agreeableness was a constant and one of the most important contributors to explained variance in the dimensions face validity, measurement quality, controllability, and quality of administration ( $rws = 11.6\%$ ,  $20.6\%$ ,  $11.5\%$ , and  $13.0\%$ ). Furthermore, locus of control was an important contributor to variance in perceived face validity, measurement quality, and quality of administration ( $rws = 17.7\%$ ,  $35.2\%$ , and  $18.9\%$ ), while self-efficacy explained a considerable amount of variance in almost all dimensions. Specifically, these were face validity, measurement quality, controllability, and absence of strain ( $rws = 28.5\%$ ,  $15.8\%$ ,  $38.2\%$ , and  $31.3\%$ , respectively), and self-esteem was the most important predictor of quality of administration ( $rw = 29.5\%$ ). Finally, negative affectivity was one of the strongest predictors of absence of strain ( $rw = 11.8\%$ ).

In general, our results revealed that core self-evaluations as a group explained a considerable amount of variance in applicants' perceptions (with an average of  $49.6\%$  per dependent variable) that clearly exceeded the variance explained by the Big Five (which altogether contributed to an average of  $24.4\%$  of the explained variance). However, the Big Five in turn explained more variance than trait affect, but even the latter accounted for an average of  $8.9\%$  of the variance across the different dependent variables (with the strongest contribution found for absence of strain). In contrast to this, GMA did not meaningfully contribute to the explained variance in either of the applicant perceptions of the AC.

## Discussion

The aim of the present study was to explore the role of dispositional variables, specifically personality and GMA, in applicant perceptions of an AC in a real application setting. Furthermore, our study was conducted with a sample that is largely comparable to a neglected group of candidates, namely internal candidates. Moreover, for the present research, we not only considered applicant perceptions of aspects of the selection process that are based in the organizational justice theory, such as face validity, but also of other aspects beyond organizational justice that have mostly not previously been tested in relation to individual differences. Specifically, we also included applicant perceptions that are relevant for extended selection procedures like ACs (Kersting, 2010; Schuler, 1990, 1993). Our findings indicated that all personality variables, namely the Big Five, core self-evaluations, and positive as well as negative affectivity, explain significant variance in applicant perceptions of the AC, even after controlling for self-rated and actual AC performance.

Our study makes at least three important contributions to the applicant reactions literature. First, we provided knowledge concerning individual differences and applicant reactions in the context of an operational AC. As applicant reactions may differ between selection procedures (Oostrom et al., 2010, 2012) and because ACs are widely used instruments (König et al., 2010; Krause & Thornton, 2009), it is important to understand the factors that influence applicants' reactions to ACs. Above all, our sample was comparable to internal candidates who have rarely been subject to applicant reactions research to date due to a lack of opportunities for doing research with this applicant group and the sensitive nature of internal selection procedures (Ford et al., 2009). Second, we explored the impact of individual differences on a broad range of applicant perceptions that have not previously been tested in relation to individual differences. Because, to a certain degree, applicants seem to prefer some selection instruments (e.g., interviews) that they also consider as less fair (Ryan & Ployhart, 2000), we additionally focused on perceptions of aspects of selection procedures that go

beyond organizational justice and that are relevant for ACs (e.g., face validity and also perceived quality of measurement, perceived controllability of the situation, perceived strain during selection, and perceived quality of administration of the selection procedure). Third, we expanded extant literature on the relationship between individual differences and applicant reactions by including additional work related individual difference constructs that have not (or only in a rather limited manner) been tested in applicant reactions research, such as positive and negative affectivity, core self-evaluations, and GMA. Thus our study gives an overview over the relationships between a broad range of applicant perceptions and a broad range of work relevant individual difference variables and their contribution to variance in applicant perceptions of the AC relative to each other.

In the present research, the assumed relationships between the Big Five traits were mostly supported at the correlational level. Specifically, agreeableness, emotional stability, conscientiousness, and extraversion were related to some but not all applicant perceptions of the AC, and all correlations were in the hypothesized direction. Although the relationships between the Big Five and applicant perceptions of the AC were less consistent in the regression analyses, the Big Five still contributed to variance in applicant perceptions even after controlling for self-rated and actual performance. Moreover, relative weight analyses revealed that agreeableness was a stable and important predictor of applicant perceptions of the AC. These findings are in line with previous studies (Truxillo et al., 2006) that have shown agreeableness to be a relatively consistent predictor of applicant perceptions, indicating that agreeable individuals are more considerate and compliant (Costa & McCrae, 1992) during selection and also react more positively to selection procedures. Furthermore, emotional stability was significantly related to absence of strain and controllability, even after controlling for self-rated and actual AC performance. This indicates that emotional stability is especially relevant for perception dimensions related to the ability to deal with stressors and insecurity.

Surprisingly, openness was not related to applicant perceptions of the AC in this study. However, with one exception, all previous studies that found significant relationships for openness and applicant perceptions were conducted with student samples. Furthermore, in Truxillo et al.'s (2006) study with actual applicants, openness was also not correlated with facets of fairness that concern structure fairness (e.g., job relatedness, information known, opportunity to perform etc.). The fact that some of the dimensions in our study (e.g., face validity, measurement quality, and controllability) are more similar to structure fairness may explain the lack of support with regard to openness. Nevertheless, concerning the Big Five, our findings suggest that it makes sense to consider the nature of the candidate pool, while designing selection procedures or when assessing applicant perceptions.

GMA was not related to applicant perceptions in our study. In connection with findings from previous studies that showed positive relationships between cognitive ability and perceived face validity of cognitive ability tests (Reeder et al., 2012), our results are somewhat unexpected. However, these positive relationships may be due to the fact that individuals who have higher cognitive ability also believe that they will do well on the cognitive ability test and thus have a positive attitude toward the test. In our study, GMA was also unrelated to self-rated performance. The reason for this may be that ACs differ from cognitive ability tests, where cognitive ability is the most important factor influencing test performance. In contrast, AC performance requires further skills, such as social skills or oral communication, and thus, possibly, not only GMA is responsible for how the candidates handle the different exercises in an AC. Therefore, in retrospect, it may not be surprising that dispositional variables other than GMA are more relevant factors for candidates' perceptions of the AC.

The assumed relationships between the three core self-evaluations dimensions and applicant perceptions were largely supported in our study. Locus of control and generalized self-efficacy were positively related to all applicant perception variables that were considered,

and both variables accounted for significant variance in applicant perceptions even after controlling for self-rated and actual performance. Additionally, relative weight analyses revealed that these core self-evaluations constructs were the most important contributors to variance in applicant perceptions of the AC as compared to the other individual difference constructs. These findings highlight that individuals who believe that they themselves are responsible for important outcomes in their lives and who also believe they are capable of influencing these outcomes, generally view challenges and specifically selection procedures, like the AC, more positively. Furthermore, individuals with higher self-esteem also tend to perceive the AC more favorably and, according to the relative weight analysis, self-esteem was the most important predictor of perceived quality of administration. Taken together, our results stress the importance of considering core self-evaluations when assessing applicant perceptions and they highlight that core self-evaluations are more important in selection than the Big Five that were commonly studied in previous applicant reaction studies.

Finally, positive and negative affectivity were both related to perceptions of the AC at the correlational level. On one hand, candidates who were high in positive affectivity perceived those aspects of the selection procedure more positively that were related to formal aspects of the procedure such as face validity, controllability, measurement quality, and quality of administration. On the other hand, individuals who were high in negative affectivity perceived those aspects of the selection procedure more negatively that are related to emotional experience, such as absence of strain or quality of administration. These findings reflect the two different dimensions and their nature well. However, these relationships were not consistent in the regression analyses and negative affectivity was only a relatively important predictor for absence of strain in the relative weight analysis. These findings support the assumption that trait affect can affect applicant perceptions of selection procedures, specifically the AC. However, the impact of trait affectivity may not be as strong and, generally, mainly be relevant for perceived strain during selection.



Concerning the issue that the present study dealt with internal candidates, the correlations found in the study fell within the range delineated by the few available studies with external applicants (e.g., Truxillo et al., 2006). This might seem somewhat surprising, given previous arguments that internal candidates might react more intensely to perceptions of a selection procedure (Ford et al., 2009). However, this should not be taken as evidence that internal applicants are not different from external applicants without collecting further data and also a direct comparison of internal versus external applicants. Furthermore, future studies should explore the effect of internal applicants' perceptions on post-selection outcomes, like perceived organizational attractiveness or organizational commitment, to determine the extent to which internal applicants' reactions differ from those of external applicants. It is there where we would expect greater differences between internal and external applicants. As pointed out by Ford et al. (2009), individuals who identify with an organization react more intensely to injustice in the organization according to Lind's (2001) fairness heuristic theory. Therefore, internal applicants should react more strongly to internal selection procedures, also given that they have already invested more time and effort in their organization than external applicants.

In sum, our results confirm that not only features of the selection process but also candidates' dispositions account for variance in their perceptions of selection procedures, specifically ACs. In the present study, core self-evaluations were particularly strong predictors of applicant perceptions and explained twice as much variance in applicant perceptions of the AC as the Big Five. Finally, trait affect was shown to have the weakest contribution. However, it is indisputable that some individuals may be predisposed to react favorably to selection situations, while others may not.

### **Practical Implications**

Our findings may have meaningful practical implications, given that not only organizations but also employees select organizations that they are willing to work for and

that there may be different candidate pools for different jobs and organizations (Schneider et al., 1998). Our results imply that the nature of the applicant pool should be taken into account while designing selection procedures and while dealing with candidates. For example, when dealing with candidates who are low in agreeableness or who attribute important outcomes externally (low locus of control), it may be important to give them more information about the job relatedness of a selection procedure, its measurement quality, and to provide candidates with sufficient information about the actual administration of a selection procedure (controllability).

Consideration of specific applicants' needs in selection is important because, on one hand, the organizations' selection procedures are often the first contact between potential future employees and the organization. Therefore, the impression that is formed during selection may have numerous consequences for the organization. Furthermore, when dealing with internal candidates, employers should keep in mind that this group of candidates may be especially sensitive to how they perceive internal selection practices, because they know more about these, have a stronger sense of identification with the organization and therefore might react more intensely to negative experiences during selection than external applicants (Ford et al., 2009). Moreover, these candidates remain in the organization even if they have not been considered for a next step in their career. Thus, their attitudes and behavior may substantially affect various organizational outcomes. For this reason, to prevent negative reactions and behavioral consequences, it may be crucial that employers respond to the needs of their specific candidates through all stages of recruitment.

### **Limitations and Implications for Future Research**

The present study has some potential limitations. First, we measured applicant perceptions of the AC before they received feedback. However, because test feedback has been shown to influence applicant perceptions (Van Vianen, Taris, Scholten, & Schinkel, 2004) and may be related to long-term applicant behaviors (Ryan & Ployhart, 2000), it is also

important to explore the effect of individual differences on applicant perceptions of the AC after feedback. Second, we could not test how applicant perceptions of the AC relate to post-selection outcomes like perceived organizational attractiveness, organizational commitment or job performance. Future research should therefore also connect these specific AC applicants' perceptions to later long-term outcomes. Third, the internal consistency of agreeableness was somewhat low in the present study. This means that our results concerning this variable may be an underestimate. Finally, our findings concerned only one group of AC candidates (military officers). Therefore, to determine the generalizability of the present findings, this study should be replicated with additional samples.

Finally, our results imply that future research within the applicant reactions field should consider the characteristics of the individuals in addition to characteristics of the selection situation in order to obtain a more complete understanding of applicant reactions and their determinants. This means that not only applicant perceptions, but also individual differences, like the Big Five, core self-evaluations, or positive and negative affectivity, should be assessed when one is interested in studying applicant reactions to selection.

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## Chapter 3

### **Interpersonal Justice During Selection and its Influence on Contextual Performance: A Longitudinal Study**

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## **Abstract**

Results concerning the effects of applicant perceptions on their actual later behavior have been sparse and remain inconsistent to date. In the present study, we investigated the postulated relationship between applicant perceptions and behavioral outcomes under conditions that should make it more likely to find supporting evidence: Specifically, in a sample of internal applicants, we focused on contextual performance, a behavioral outcome that is potentially especially affected by applicant perceptions. Furthermore, we studied applicant perceptions of interpersonal justice during the administration of an assessment center and during selection feedback. As proposed by the compatibility principle, these perceptions are of particular relevance in assessment centers and conceptually correspond with the targeted behavioral outcome. In line with our hypotheses, we found that perceptions of interpersonal justice during the administration of the assessment center and during feedback have a positive effect on later contextual performance and explain incremental variance beyond outcome favorability and distributive justice. Implications for research and practice are discussed.

In times when there is increasing competition for employees between organizations, applicant reactions to selection procedures are especially important. Therefore, in the last twenty years, a growing body of research has been dedicated to applicant perceptions of different selection procedures and their consequences for selection outcomes. Important insights were gained with regard to these perceptions and their effects on perceived organizational attractiveness, post-selection intentions (e.g., job acceptance intentions), and post-selection self-perceptions (e.g., self-efficacy).

It has also been suggested that applicant perceptions may “spill over” into post-selection behaviors (e.g., job acceptance, job performance, contextual performance, or turnover; Gilliland, 1993; Gilliland & Steiner, 2012). However, results concerning applicant perceptions and these important outcomes have been sparse and remain inconsistent to date (cf. Becker, Connolly, & Slaughter, 2010; Gilliland, 1994; Gilliland & Steiner, 2012; McCarthy et al., 2013; Truxillo & Bauer, 2011). On the one hand, one study showed that measures to improve applicant perceptions can influence reapplication behavior (Gilliland et al., 2001), and two other studies found indirect effects of applicants’ perceptions of procedural justice on their job performance (McCarthy et al., 2013). On the other hand, however, several studies failed to find a relationship between applicant perceptions of a selection procedure and later behavior (e.g., Becker et al., 2010; Truxillo, Bauer, Campion, & Paronto, 2002), or they found inconsistent evidence for the postulated relationships (Gilliland, 1994). Thus, it is not clear whether and to what extent applicant perceptions affect applicants’ actual post-selection behavior.

The present research aims to shed more light on the effects of applicant perceptions on their later behavior by examining the postulated effects under several conditions in which applicants’ perceptions are likely to affect this behavior. Specifically, first, we study the postulated relationships in a group of internal applicants whose reactions should be much more pronounced due to their higher identification with the company than those of external

applicants (Ford, Truxillo, & Bauer, 2009). Second, we focus on contextual performance, an outcome that might be influenced more strongly by applicants' perceptions of the selection process than job performance (Organ, 1988). Third, given the limited support concerning the effects of applicant perceptions on post-selection behaviors, McCarthy et al. (2013) recently suggested considering the compatibility principle proposed by Ajzen and Fishbein (1977). Specifically, McCarthy et al. argued that the relationship between applicant perceptions and behavioral outcomes should be more pronounced when the specific perceptions that are considered, the selection instrument under study, and the outcome criteria are conceptually matched. Therefore, we aim to explore the impact of applicant perceptions on contextual performance by applying the compatibility principle. In addition to this – and in contrast to several previous applicant reactions studies (cf. Ployhart & Ryan, 1998; Ryan & Ployhart, 2000) – we put the postulated relationships to a stronger test by studying applicant reactions at different points in time during the selection process, namely before as well as after the applicants received feedback.

### **Theoretical Background**

In the following sections, we give a brief overview of the relevant theoretical background concerning applicant reactions. We then summarize previous research that studied the impact of applicant perceptions on post-selection behaviors. In addition, we describe the conditions that we believe are beneficial for studying the postulated relationship between applicant perceptions and later behavior in more detail. Next, we explain how the compatibility principle can be applied by matching applicant perceptions and the selection procedure to the behavioral outcome of our study. Finally, we discuss other aspects that are relevant for studying applicant reactions, such as the stage of the selection procedure, outcome favorability, distributive justice, and the use of pre-selection baseline measures for relevant outcomes.

### **Applicant Reactions to Selection Procedures**



Organizational justice theory provides a theoretical framework that describes the process by which applicant perceptions during selection influence various organizationally relevant outcomes. In this framework, Gilliland (1993, also see Gilliland & Steiner, 2012) proposed a set of ten rules that are pertinent to the perceived fairness of a selection process and that comprise aspects of procedural, informational, and interpersonal justice. Furthermore, three distributive justice rules characterize the perceived fairness of the selection outcome. In Gilliland's model, both the perceived fairness of the selection process and the perceived fairness of the selection outcome have been hypothesized to influence applicants' attitudes, behaviors, and self-perceptions. Furthermore, it is assumed that these effects should be observable both during the pre-hire stage (i.e., before an applicant has accepted a potential job offer, e.g., in reactions like the intention to accept such a potential job offer) as well as during the post-hire stage, which refers to when the former applicant has actually started to work in the offered job.

Even though many studies generally supported the postulated relationships between several applicant perceptions (e.g., job relatedness or opportunity to perform) and a number of important pre-hire outcomes (e.g., organizational attractiveness, various applicant intentions and self-perceptions; cf. Gilliland & Steiner, 2012; Hausknecht, Day, & Thomas, 2004; Truxillo & Bauer, 2011), there is only limited evidence concerning the effects of applicant perceptions on applicants' actual behavior. However, without supporting evidence concerning effects of applicant perceptions on their later behaviors, the utility of studying applicant perceptions may be questioned. It has even been suggested that, in such a case, research concerning applicant perceptions can be dismissed as "practically irrelevant" (Ryan & Ployhart, 2000, p. 593).

With regard to the available research, there are a few studies that found support for the effects of applicant perceptions on their later behavior. Specifically, in two recent studies by

McCarthy et al. (2013), applicant perceptions of procedural justice rules had an indirect influence on job performance and this effect was mediated by test performance. Furthermore, in a study by Gilliland et al. (2001), the authors found that providing an adequate explanation in an employment rejection letter led to more reapplication behavior for a future job opening.

In contrast to this, however, the majority of the few available studies failed to find supportive evidence. For example, in an experimental study with students who completed one of several different selection procedures to get a student job, Gilliland (1994) did not find a consistent relationship between job relatedness and job performance. Instead, he found that later job performance was lower in a group of students who believed that the selection decision was made on the basis of a work sample test than in a group who believed they were selected on the basis of a cognitive ability test, even though the work sample test was perceived as higher in job relatedness (actually, selection for the targeted job in this study was determined randomly). However, Gilliland also found that job performance was much lower, as compared to the two previous groups, in a group that believed they were selected on the basis of a personality test that was perceived as lowest in job relatedness. In another study, Truxillo et al. (2002) investigated whether later turnover was related to one aspect of informational justice, namely perceptions of selection information, for applicants who completed a written test and a video test. They found no relationship between selection information and turnover. Finally, another aspect of informational justice, namely feedback timeliness after a selection interview, was found to be unrelated to job performance and turnover in a study by Becker et al. (2010).

In our opinion, there are several possible factors that might have contributed to these mixed findings. Therefore, we now briefly discuss three conditions under which positive relations between applicant perceptions and their later behaviors should be more likely.

First, we believe that post-selection behaviors are especially relevant in the case of internal applicants. Internal applicants have already invested a lot of effort in their

organization and they still remain in the organization even if the selection outcome is negative. Additionally, internal applicants probably have a stronger sense of identification with the company than external applicants (Ford et al., 2009). Thus, since individuals tend to react more intensely if they perceive injustice in a group with which they identify (Huo, Smith, Tyler, & Lind, 1996), internal applicants should react more strongly than external applicants when they perceive unfairness in the way they are treated by their organization (Ford et al., 2009).

Second, applicant perceptions might affect outcomes like contextual performance more strongly than the behavioral outcomes that were previously studied (e.g., job performance or turnover). Contextual performance is a broad term for behaviors at work that “do not contribute to the technical core itself so much as they support the broader organizational, social, and psychological environment in which the technical core must function” (Borman & Motowidlo, 1993, p. 73). Such behaviors involve organizational citizenship behavior (OCB), prosocial organizational behavior, civic virtue, or general activities such as volunteering, helping, and endorsing organizational objectives (Borman & Motowidlo, 1993, 1997; Motowidlo, 2000). These kinds of employee behaviors in organizations are an important factor for organizational effectiveness (Podsakoff, Whiting, Podsakoff, & Blume, 2009; Whitman, van Rooy, & Viswesvaran, 2010).

It has been proposed that fairness perceptions in general should have a considerable effect on contextual performance (Organ, 1988). Since contextual performance is not formally part of the job requirements and thus is not connected to formal sanctions, it might be easier to reduce one’s level of contextual performance as a reaction to perceived injustice. In contrast, lowering one’s job performance, for example, may potentially lead to punitive measures by the organization, such as loss of income, harassment, or even grounds for

discharge. Furthermore, reducing one's level of contextual performance is also a less serious reaction than terminating one's job contract.

Contextual performance is usually measured by means of self- or other-ratings (Dalal, 2005). However, another -- rarely used -- method of assessing contextual performance is to consider actual behavioral indicators. One such indicator is survey participation (Spitzmüller, Glenn, Sutton, Barr, & Rogelberg, 2007). Survey participation was found to be related to volunteering for "activities geared towards the resolution of organizational problems" (Spitzmüller et al., 2007, p. 457) and thus can be considered an objective facet of contextual performance. Furthermore, participation vs. non-participation in a survey gauging one's perception of a selection process might be a simple behavioral consequence of whether applicants perceive this process positively or not. Therefore, a combination of ratings of contextual performance with survey participation as an actual behavioral indicator might be useful for determining the possible effects of applicant perceptions on their later behavior.

Finally, another aspect that might have contributed to the lack of support for the postulated relationship between applicant perceptions and behavioral outcomes might have been the limited conceptual relatedness between the targeted perceptions and outcomes (cf. McCarthy et al., 2013). These studies explored applicant perceptions of procedural justice (e.g., job relatedness, chance to perform; Gilliland, 1994; McCarthy et al., 2013) or informational justice (e.g., selection information, feedback timeliness; Becker et al., 2010; Truxillo et al., 2002) and their influence on job performance or turnover. Of these, chance to perform and job performance are potentially conceptually related because of their common connection with applicants' self-efficacy. However, other perception variables in previous studies were conceptually less related to the studied outcomes. Thus, it might be possible that the relationship between applicant perceptions and post-selection behavior is more consistent when the specific applicant perceptions, the behavioral outcome, and the selection procedure

are conceptually related. Therefore, we describe the compatibility principle in the next section.

### **Applicant Reactions and the Compatibility Principle**

The compatibility principle was proposed by Ajzen and Fishbein (1977) as a response to the questioned utility of attitudinal measures for predicting behavior. They argued that stronger attitude-behavior relations should result when attitudinal and behavioral entities conceptually correspond with each other. This concept means that, for example, measures of attitudes should also make reference to behavioral aspects that are measured. In the context of employees' attitudes towards work, for instance, attitudinal measures should also include behavioral aspects like working extra hours, and not just general attitudes towards work like overall job satisfaction.

McCarthy et al. (2013) pointed out that the compatibility principle is also of relevance for considering the effects of applicant perceptions on relevant outcomes. Specifically, it should be more likely to find stronger relationships when applicant perceptions are conceptually related to the targeted outcome and are measured in a selection procedure where these perceptions are more salient. For example, McCarthy et al. suggested that perceptions of justice should have a stronger relationship with interpersonal-based performance. In support of this suggestion, they referred to studies that have shown that perceived high levels of justice lead to enhanced social exchange relations that motivate employees to engage in interpersonal-based behaviors (Posthuma & Campion, 2005).

There are at least two reasons that support the conceptual relationship between contextual performance and interpersonal justice: First, both can be seen as exchange behaviors in social exchange relationships between the organization and its employees (Blau, 1967; Organ, 1988). The underlying mechanism for this relationship can be found in social exchange theory (Blau, 1967; Cropanzano & Mitchell, 2005). According to social exchange

theory, a party that “supplies rewarding services obligates” the other party to reciprocate by providing unspecified benefits in the future (Blau, 1967, p. 89). This argument means that interpersonal justice provided by an organization may motivate employees to give back the fair interpersonal treatment they received by engaging in beneficial behaviors towards the organization -- for example, in contextual performance. In line with this argument, there is meta-analytic evidence that indicators of the quality of social exchange are mediators of the relationship between organizational justice in general and OCB (Colquitt et al., 2013).

The second reason supporting the conceptual match between interpersonal justice and contextual performance is that these two constructs share similar elements: Both involve the exchange of socio-emotional resources (Cropanzano & Mitchell, 2005). In line with this idea, meta-analytic findings also revealed that of all the justice dimensions, interpersonal justice is the strongest correlate of OCB (Colquitt, Conlon, Wesson, Porter, & Ng, 2001; Colquitt et al., 2013).

Furthermore, we believe that interpersonal justice, or in other words, interpersonal treatment of candidates, is especially salient in selection procedures with a strong interpersonal component, like assessment centers (ACs). ACs are popular selection procedures that are used to select external as well as internal candidates (König, Klehe, Berchtold, & Kleinmann, 2010; Krause & Thornton, 2009). ACs usually consist of different exercises that are designed to elicit job-relevant behaviors in simulations of tasks that are relevant for the targeted position. The administration of ACs requires numerous interactions of the administering staff and the assessors with the candidates before, between, and during the exercises. Furthermore, applicants may also require particular attention and tactfulness during feedback when their AC results are explained to them (Thornton & Rupp, 2012). Finally, in terms of practical implications for the administration of a selection procedure, there are potentially more interactions with the candidates in an AC; thus there are more

possibilities to show interpersonal treatment during the administration of an AC and during AC feedback than, for example, during the administration of a cognitive ability test.

### **Applicant Reactions and Selection Outcome Feedback**

An important issue in the domain of applicant reactions concerns the fact that these reactions may change after the applicants receive feedback regarding their selection results (Ryan & Ployhart, 2000; Van Vianen, Taris, Scholten, & Schinkel, 2004; Uggerslev, Fassina, & Kraichy, 2012). This is especially relevant in light of evidence that the favorability of the selection outcome (e.g., a job offer vs. a rejection) affects fairness perceptions as well as several outcomes, such as applicants' behavioral intentions (Hausknecht et al., 2004).

Additionally, selection feedback may have a substantial effect on candidates in general (Schinkel, van Dierendonck, van Vianen, & Ryan, 2011) and especially on AC candidates (Fletcher, 1991) if the selection outcome is negative. Receiving negative feedback versus not receiving any feedback was shown to affect test takers' well-being and self-perceptions (Schinkel, van Dierendonck, & Anderson, 2004; Schinkel et al., 2011) as well as organizational attractiveness (Schinkel et al., 2011). Moreover, the way applicants were treated during feedback was related to their later ratings of job attractiveness (Van Vianen et al., 2004) and organizational attractiveness (Anseel & Lievens, 2009). For these reasons, it is important to also assess feedback perceptions when examining the impact of applicants' perceptions of an AC process on post-selection outcomes.

### **Other Relevant Aspects Concerning Applicant Reactions**

As previously mentioned, outcome favorability and distributive justice have been shown to have an impact on both applicant perceptions as well as relevant outcomes (Hausknecht et al., 2004; Ployhart & Ryan, 1998; Ryan & Ployhart, 2000). Therefore, it is important to investigate the influence of applicant perceptions on behavioral outcomes independent of outcome favorability and distributive justice. For this reason, in the present

study, we explore the extent to which applicant perceptions during a selection process explain incremental variance in the behavioral outcomes beyond the effects of outcome favorability and distributive justice.

Furthermore, it has also been suggested that some relevant variables that are usually regarded as outcomes may not only be the consequences of applicant perceptions but may also affect these perceptions as antecedents (Ryan & Ployhart, 2000). Because of this possibility, it has been suggested that pre-selection measures of the targeted outcome variables should be taken into account in applicant reactions research (Ryan & Ployhart, 2000). In addition, in the case of contextual performance, it also is possible that both applicant perceptions and contextual performance are influenced by trait affect (Alessandri et al., 2012; Dalal, 2005; Merkulova, Melchers, Kleinmann, Annen, & Szvircsev Tresch, 2013; Williams & Shiaw, 1999). Therefore, to address this and other potential factors that might influence both applicant perceptions and post-selection behaviors (Podsakoff, Whiting, Welsh, & Mai, 2013), pre-selection levels of contextual performance should be taken into account while exploring the postulated relationship between applicant perceptions and their later contextual performance.

### **Aims of the Present Study and Hypotheses**

The aim of the present study is to investigate whether internal applicants' perceptions of the selection process during their participation in an AC influence ratings of their later contextual performance as well as a behavioral indicator of contextual performance. In light of the findings reviewed above and given our previous arguments, we predict that perceived interpersonal justice during the administration of the AC is related to internal applicants' later contextual performance. Accordingly, we make the following hypothesis:



Hypothesis 1a: Perceptions of interpersonal justice during the administration of an AC are positively related to internal applicants' later contextual performance after they received feedback.

Furthermore, we predict that perceptions of interpersonal justice during the administration of an AC affect contextual performance over and above the effect of outcome favorability and distributive justice. Accordingly, we predict:

Hypothesis 1b: Perceptions of interpersonal justice during the administration of an AC have a positive effect on the candidates' later contextual performance after they receive feedback, even after controlling for outcome favorability and distributive justice.

In addition, we expect that applicant perceptions of how they are treated during AC feedback will also be related to their later contextual performance and thus we hypothesize the following:

Hypothesis 2a: Perceptions of interpersonal justice during AC feedback are positively related to internal applicants' later contextual performance.

Hypothesis 2b: Perceptions of interpersonal justice during AC feedback have a positive effect on the candidates' later contextual performance, even after controlling for outcome favorability and distributive justice.

Finally, given that contextual performance may also be connected with more positive applicant perceptions due to factors like trait positive affect, we also test these hypotheses by taking baseline values of applicants' pre-selection contextual performance into account.

## **Method**

### **Sample and Procedure**

Our sample consisted of 272 candidates who took part in different ACs that were used by the Swiss Armed Forces to select internal candidates for different positions in the

organization. Of the study participants, 265 were male and 7 were female. The candidates' mean age was 31.00 years with a range from 21 to 53. The applicants' educational background ranged from apprenticeship to university.

The ACs lasted one to two days. They were used to select career officers or career noncommissioned officers (NCOs) from a pool of militia officers and militia NCOs, or to make promotion decisions for career or militia officers. All candidates had served in their current positions in the Swiss Army for at least one to two years. Previous evaluations attested to the good criterion-related validity of similar ACs of the Swiss Armed Forces (Gutknecht, Semmer, & Annen, 2005; Melchers & Annen, 2010).

The surveys were administered at three different times: approximately one to two weeks before the candidates attended the AC (T1), immediately after they had completed their respective AC and before they received feedback (T2), and approximately two months after candidates had received feedback, which was either provided to them before leaving the site of the AC administration or some time after the AC (T3). Before the AC and two months after AC feedback, the candidates received an email asking them to participate in an evaluation survey launched by the Swiss Army and administered by a Swiss university to evaluate the AC. While the AC administrators instructed all candidates to complete the study questionnaire immediately after the AC at Time 2, participation was voluntary for the survey before the AC and two months after AC feedback. The candidates were assured full confidentiality of their answers and they were told that all the information they provided would only be used for the evaluation of the AC and for research purposes.

The first questionnaire, before the candidates attended the AC, measured candidates' baseline level of contextual performance (i.e., OCB) and demographic variables. In the second questionnaire, immediately after the AC, candidates were asked about their perceptions during their participation in the AC. The third questionnaire, two months after AC feedback, measured candidates' feedback perceptions, perceived distributive justice, and their

current level of contextual performance (OCB). 170 candidates participated in the first survey, 262 participated in the second survey, and 116 in the third survey.

### Measures

All variables for which ratings were gathered were measured with five-point Likert scales ranging from 1 (= *I totally disagree*) to 5 (= *I totally agree*). The only exception for which different scale anchors were used concerned the scales for perceptions of distributive justice, which ranged from 1 (= *not at all*) to 5 (= *absolutely*).

***Interpersonal justice during the AC.*** With regard to interpersonal justice we focused on interpersonal effectiveness, which relates to one of the interpersonal justice rules from Gilliland's (1993; Gilliland & Steiner, 2012) model. It was measured with three items from a German translation (Manzey & Gurk, 2005) of the Selection Procedural Justice Scale (SPJS) by Bauer, Truxillo, Sanchez, Craig, Ferrara, and Campion (2001). One example of these items is: "The AC administrators treated applicants with respect during the AC". The internal consistency of these three items was .64, and raised to .76 after excluding one item ("The AC administrators were considerate during the AC").

***Interpersonal justice during feedback.*** Interpersonal justice during feedback was measured with four items developed by Van Vianen et al. (2004) to assess feedback treatment. One example is: "I appreciated the way in which the psychological staff member provided me with the information about my assessment results". The scale had an internal consistency of .93.

***Distributive justice.*** The distributive justice of the selection decision was assessed with a German version (Maier, Streicher, Jonas, & Woschee, 2007) of Colquitt's (2001) distributive justice scale, which consisted of four items (e.g., "Does your AC outcome reflect the effort you have put in the AC?"). The internal consistency of this scale was .88.

***Selection outcome.*** Information about the candidates' success in the AC was coded as 0 (= *failed*) or 1 (= *passed*) and was available for 165 candidates. For 116 candidates, this

information was taken from their responses to the survey two months after AC feedback. For another 49 candidates who did not participate in the third survey, we received the information from the AC administrators.

***Contextual performance (self-rated).*** Nine items from a German OCB scale developed by Staufenbiel and Hartz (2000) were used to collect self-ratings of candidates' contextual performance. Two examples of these items are: "I'm always ready to help others if they have questions or if something is unclear to them" and "I voluntarily take over duties that are formally not part of my job". The internal consistency of the scale was .76 at Time 1 and .78 at Time 3.

***Contextual performance (behavioral).*** We used candidates' participation in the third study as a behavioral indicator for their contextual performance (Spitzmüller et al., 2007). As this participation was voluntary and candidates were informed that their participation in the third survey was especially important for the evaluation study, this indicator represents voluntary behavior towards the benefit of the organization. This variable was coded 0 (= *did not participate*) or 1 (= *participated*).

## **Results**

Means, standard deviations, internal consistencies, and correlations for all study variables are shown in Table 1. We used all available cases for the respective combination of variables and measurement times. Specifically, data for 105 candidates were available for analyses that used data from Time 2 and Time 3, 81 for analyses with data from Time 1 and Time 3, 116 for analyses with data from the last survey at Time 3, and 77 for analyses that involved variables from all three questionnaires.

We first considered the correlational results. In line with prior research, outcome favorability (failed vs. passed) significantly correlated with perceived interpersonal justice during feedback ( $r = .27, p < .01$ ) and with distributive justice ( $r = .53, p < .01$ ), indicating

that outcome favorability is moderately related with applicant perceptions of the AC feedback and strongly related with their perceptions of outcome fairness. Outcome favorability was also significantly correlated with survey participation two months after the candidates received feedback ( $r = .22, p < .01$ ), meaning that candidates who passed the AC were more likely to take part in the third survey.

Table 1

*Descriptive statistics and correlations between all study variables*

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7
1. Interpersonal justice AC T2	4.88	0.34	(.76)						
2. Interpersonal justice feedback T3	4.18	1.02	.17 <sup>†</sup>	(.93)					
3. Distributive justice T3	3.76	0.96	.20*	.47**	(.88)				
4. Outcome favorability	0.79	0.41	.03	.27**	.53**	(-)			
5. OCB T1	4.41	0.33	.20*	.02	.24*	.12	(.76)		
6. OCB T3	4.33	0.37	.39**	.16 <sup>†</sup>	.14	.12	.52**	(.78)	
7. Study participation T3	0.43	0.50	.09	(-)	(-)	.22**	-.15*	(-)	(-)

*Note.* Outcome favorability was coded as 0 (= *failed*) or 1 (= *passed*) and survey participation at Time 3 as 0 (= *did not participate*) and 1 (= *participated*). The *N*s for the different correlations varied and were as follows: T1-T2:  $N = 165$ ; T2-T3:  $N = 110$ ; T1-T3:  $N = 86$ ; T1:  $N = 170$ ; T2:  $N = 262$ ; T3:  $N = 116$ .

<sup>†</sup>  $p < .10$ , \*  $p < .05$ , \*\*  $p < .01$ .

Furthermore, there was a significant negative correlation between OCB at Time 1 and participation in the third survey ( $r = -.15, p < .05$ ) at Time 3. Since participation in the first survey at Time 1 also represents an act of contextual performance, we did not expect a negative correlation between OCB measured at Time 1 and study participation at Time 3. Therefore, we examined the data and found that the significant negative correlation was due to five candidates who showed a tendency for extreme answers at Time 1 and who did not participate in the study at Time 3. After the data were reanalyzed without these outliers, zero

correlations were found; however, all other results of the present study remained comparable and led to the same conclusions. Therefore, the results reported here include all available cases.

In the next step, we tested our hypotheses. Hypothesis 1a predicted that perceived interpersonal justice during the administration of the AC (i.e., measured immediately after the AC but before feedback) would be significantly related to candidates' later contextual performance. The significant correlation between perceived interpersonal justice during the administration of the AC and OCB two months after AC feedback ( $r = .39, p < .01$ ), supported this hypothesis. Furthermore, we expected that perceived interpersonal justice would explain incremental variance in contextual performance beyond the effects of outcome favorability and distributive justice (Hypothesis 1b). Therefore, we conducted a hierarchical regression analysis: With OCB two months after AC feedback as the dependent variable, we first entered outcome favorability and distributive justice in Step 1 as control variables, and then entered perceived interpersonal justice during the administration of the AC in Step 2 (Table 2). Again, the results were in line with Hypothesis 1b, meaning that perceived interpersonal justice during the administration of the AC was a significant predictor of OCB in Step 2 ( $\beta = .38, p < .01$ ) and led to a significant change in  $R^2$  ( $\Delta R^2 = .14, p < .01$ ) beyond outcome favorability and distributive justice.

Furthermore, given that it has been argued that ratings of OCB may also reflect positive affect (Alessandri et al., 2012; Williams & Shiaw, 1999) and also given that pre-selection OCB was correlated with both, perceived interpersonal justice during the administration of the AC and with OCB two months after AC feedback, we also determined the degree to which applicant perceptions of the AC predict OCB after AC feedback when baseline values of OCB are taken into account. Therefore, we repeated the multiple regression but also included OCB measured before the AC as another control variable in Step 1. With a significant increase of the explained variance in OCB in Step 2 ( $\Delta R^2 = .05, p < .05$ ) and a

significant beta for perceptions of interpersonal justice ( $\beta = .24, p < .05$ ), these results again supported Hypothesis 1b by showing that applicants' later contextual performance changed significantly as a response to their perceptions of interpersonal justice during the AC.

Table 2

*Hierarchical regression analyses of interpersonal effectiveness during the AC on applicants' contextual performance at Time 3*

	T3 OCB					
	Without OCB T1 ( <i>n</i> = 105)			Controlling for OCB T1 ( <i>n</i> = 77)		
	$\beta$	$R^2$	$\Delta R^2$	$\beta$	$R^2$	$\Delta R^2$
Step 1		.01	.01		.30**	.30**
(OCB T1)	( - )			.48**		
Outcome favorability	.00			-.08		
Distributive justice T3	.11			.19		
Step 2		.15**	.14**		.35*	.05*
Interpersonal justice AC T2	.38**			.24*		

\*  $p < .05$ , \*\*  $p < .01$ .

We also tested Hypotheses 1a and 1b by considering the impact of the applicants' perceptions of interpersonal justice during the AC on the behavioral indicator of contextual performance, or in other words, on survey participation two months after AC feedback. First, even though the correlation between perceived interpersonal justice during the AC and participation in the last survey was in the expected direction, it was not significant ( $r = .09$ ). However, we also conducted a stepwise logistic regression to test whether perceived interpersonal justice during the AC increased the probability that candidates also participated in the study at T3 when outcome favorability was taken into account. With participation in the third survey as the dependent variable, we entered outcome favorability in Step 1 and perceived interpersonal justice during the AC in Step 2 (cf. Table 3). In our model, adding perceived interpersonal justice during the administration of the AC in Step 2 led to a

marginally significant improvement of model fit,  $\Delta\chi^2(1) = 2.85, p < .10$ , and an improvement in  $R^2$  from .06 to .07 (Cox & Snell) and .08 to .10 (Nagelkerke), respectively. As can be seen in Table 3, perceived interpersonal justice during the administration of the AC marginally significantly predicted survey participation two months after AC feedback after controlling for outcome favorability. Specifically, in Step 2 an increase of one scale point concerning candidates' perception of interpersonal justice increased the likelihood that candidates participated in the third survey 2.71 times ( $p < .10$ ). Given the directional nature of our hypothesis, we consider the result of this two-tailed significance test as suggestive evidence for our line of reasoning.

Hypothesis 2a predicted that perceived interpersonal justice during AC feedback would also be positively related the applicants' contextual performance. The correlational results can be seen as moderate support for this hypothesis, as perceived interpersonal justice during feedback marginally significantly correlated with OCB after feedback,  $r = .16, p < .10$ . Furthermore, in our Hypothesis 2b, we expected that perceived interpersonal justice during AC feedback would account for incremental variance in later contextual performance after controlling for outcome favorability and distributive justice. Again, we conducted hierarchical regression analyses with OCB two months after AC feedback as the dependent variable (Table 4). For the first analysis, we entered outcome favorability and distributive justice in Step 1, and perceived interpersonal justice during feedback measured two months after AC feedback in Step 2. These results did not support Hypothesis 2b, as interpersonal justice during feedback did not explain significant variance in OCB beyond variance accounted for by outcome favorability and distributive justice. However, we found support for Hypothesis 2b when we determined the impact of candidates' feedback perceptions on their OCB two months after AC feedback after controlling for baseline levels of OCB. Specifically, we conducted the same analysis again, this time also entering pre-selection values of OCB in Step 1 (cf. Table 4). There was a significant change in  $R^2$  for perceived interpersonal justice during



feedback measured two months after feedback ( $\Delta R^2 = .05, p < .05$ ), and a significant  $\beta$  ( $\beta = .27, p < .05$ ) indicated that feedback perceptions explained incremental variance in OCB two months after feedback beyond that explained by outcome favorability and outcome fairness. Thus, Hypothesis 2b was supported in this second regression.

Table 3

*Stepwise logistic regression model for the prediction of survey participation at Time 3.*

	Survey participation T3 ( $n = 165$ )				
	$b$	$SE\ b$	Odds ratio	95% CI for Odds Ratio	
				Lower	Upper
Step 1					
Outcome Favorability	1.21**	.40	3.34	1.52	7.34
Step2					
Interpersonal justice AC T2	1.00†	.59	2.71	0.85	8.63

*Note.* Step 1:  $R^2 = .06$  (Cox & Snell),  $.09$  (Nagelkerke). Model  $\chi^2(1) = 9.34, p < .01$ ; Step 2:  $R^2 = .07$  (Cox & Snell),  $.10$  (Nagelkerke). Model  $\chi^2(2) = 12.18, p < .01$ .

†  $p < .10$ , \*  $p < .05$ , \*\*  $p < .01$ .

Table 4

*Hierarchical regression analyses of interpersonal justice during the AC T2 on OCB T3*

	OCB T3					
	Without OCB T1 ( <i>n</i> = 113)			Controlling for OCB T1 ( <i>n</i> = 81)		
	$\beta$	$R^2$	$\Delta R^2$	$\beta$	$R^2$	$\Delta R^2$
Step 1		.02	.02		.29**	.29**
(OCB T1)	( - )			.49**		
Outcome favorability	.05			-.02		
Distributive justice T3	.11			.16		
Step 2		.04	.04		.34*	.05*
Interpersonal justice feedback T3	.15			.27*		

\*  $p < .05$ , \*\*  $p < .01$ .

### Discussion

This research contributes to the literature concerning applicant reactions to selection procedures by exploring the effects of applicant perceptions on behavior-related outcomes. Although such effects are predicted by common theories, the effect of applicant perceptions on their later behavior has barely received empirical support in applicant reactions research (Gilliland, 1993; Gilliland & Steiner, 2012; Hausknecht et al., 2004).

The key contribution of the present research is the evidence that applicant perceptions of the selection process can indeed affect their later contextual performance. This was largely true, independent of whether we focused on perceptions that were measured directly after the administration of the selection procedure or after feedback was provided to the applicants. Furthermore, support for the postulated relationship between applicant perceptions of interpersonal justice and contextual performance was obtained for ratings of contextual performance and also, to a certain degree, for a behavioral indicator of contextual performance, namely for candidates' participation in our third survey. In light of previous futile attempts to find evidence for the postulated direct relationship between applicant

perceptions and later behavior (e.g., Becker et al., 2010; Hausknecht et al., 2004; McCarthy et al., 2013; Truxillo et al., 2002), the present study supports the notion that applicant perceptions during a selection procedure indeed matter in terms of applicants' actual behavior, and thus research concerning applicant reactions should not be "dismissed as practically irrelevant" (Ryan & Ployhart, 2000, p. 593).

Finally, the relationship between applicant perceptions of interpersonal justice and internal candidates' later contextual performance persisted even after we controlled for other relevant predictors of applicant reactions (Gilliland & Steiner, 2012; Ryan & Ployhart, 2000; Truxillo & Bauer, 2011). Specifically, applicant perceptions explained incremental variance in ratings of contextual performance and, to a certain degree, also in the behavioral indicator of this outcome beyond that accounted for by outcome favorability and perceptions of distributive justice. In addition, perceived interpersonal justice during the selection procedure and during feedback explained incremental variance in ratings of contextual performance even beyond variance accounted for by pre-selection values of this outcome. These results mean that applicant perceptions of interpersonal justice accounted for significant change in contextual performance and explained incremental variance in this outcome beyond variance attributable to other factors that affect applicant perceptions as well as the targeted outcome. Taken together, our findings support the relative importance of applicant perceptions that are shaped during the selection procedure.

As the results were obtained in a sample of internal applicants, our study not only addressed the call for research with this important but understudied group of applicants (Ford et al., 2009), but the present results also suggest that the way how internal applicants are treated can have a profound impact on the particular organizations. In light of the importance of contextual performance for the effectiveness of organizations (Podsakoff et al., 2009; Whitman et al., 2010), and because internal applicants remain in the organization even if the

selection outcome is negative, our results suggest that the way organizations design and administer selection processes can have important consequences. For example, if candidates feel they had not been treated fairly in a selection procedure, their performance on the job may be impaired and, as a consequence, other outcomes valued by organizations that depend on a motivated and engaged workforce may be negatively impacted.

### **Practical Implications**

From a practical perspective, our study offers several important implications. First, given the fact that internal selection practices may be a challenge to candidates' relationship with their employer (Lind, 2001), our finding that interpersonal justice affects candidates' later contextual performance suggests that assuring a high quality of interpersonal treatment during the selection process and during feedback is an important aspect that should be taken into account by organizations, regardless of the selection outcome. This investment may motivate candidates to reciprocate by engaging in contextual behavior. Thus, trying to keep interpersonal justice high during a selection procedure could be a valuable way to positively influence the organizational, social, and psychological work environment of internal candidates, independently of their selection outcome.

Second, on a more general level, the present study demonstrates that applicant perceptions can influence vital behavioral outcomes. This is important in view of previous unsuccessful attempts to find effects of applicant perceptions on later behavioral outcomes (e.g., Becker et al., 2010; Hausknecht et al., 2004; Truxillo et al., 2002). As a consequence of these prior unsuccessful attempts, organizational decision makers might have asked whether it is worth worrying about applicant perceptions in general when they do not pay out in terms of relevant behavioral consequences, such as an increase in the acceptance of job offers, better job performance, or higher levels of contextual performance (cf. Ryan & Ployhart, 2000).

Third, related to the previous point, findings from the organizational justice literature indicate a close relationship between interactional justice (e.g., informational and interpersonal justice) and other important outcomes like employees' counterproductive behavior, turnover, and even employee health (e.g., Greenberg, 1990, 2006, 2010). Thus, it is possible that the feeling of having been treated unfairly might also lead to negative effects on candidates' health or on retaliation by internal applicants in terms of undesired behaviors. Furthermore, especially in times when there is increasing competition for employees between organizations, organizations might also increase their risk of losing skilled employees if these employees do not feel that they were treated fairly during an internal selection process.

### **Limitations and Future Research**

Despite our promising findings, this study also has some potential limitations. First, our sample largely consisted of male applicants. This may impair the generalizability of our results. However, since there is meta-analytic evidence that gender does not influence applicant reactions (Hausknecht et al., 2004), we believe that this aspect should not have had meaningful impact on our findings.

Second, the variance of candidates' self-reported contextual performance after they had received feedback about their AC results might have been limited given that participation in the last survey was influenced by the selection outcome. Thus, the actual impact of applicant perceptions on OCB might possibly be underestimated in our study. Future research using peer or supervisor ratings of contextual performance is needed to address this limitation.

Third, the somewhat selective nature of the participants in the last survey may also be a reason why our findings concerning applicants' feedback perceptions were somewhat less consistent than the results concerning applicants' perceptions during the administration of the AC. A study by Van Vianen et al. (2004) suggests that applicants' feedback perceptions are more important for post-selection outcomes than applicants' perceptions during the

administration of a selection procedure. Their results showed that feedback perceptions predicted perceived organizational attractiveness while applicant perceptions during the administration of the selection procedure did not. For this reason, more research is needed to understand the role of feedback perceptions in determining applicants' post selection behavior.

Our findings also have several implications for future research. Specifically, the present research addressed several conditions under which positive relationships between applicant perceptions and later behavioral outcomes should be more likely. Future studies should further explore the relative importance of each of the three conditions and the different combinations of these conditions with regard to the postulated relationships between applicant perceptions and later behavioral outcomes. Additionally, a broader range of possibilities to studying conceptually related applicant reactions, behavioral outcomes, and selection procedures should be examined. For instance, applicants' perceptions of the opportunity to perform during selection procedures like ACs or work simulations on the one hand, and job performance or achievement-related behavior on the other hand could represent further examples of conceptually matched perceptions, selection procedures, and outcomes that are worth being considered in future research. Another possibility would be to assess justice perceptions of integrity tests and applicants' later counterproductive behavior (McCarthy et al., 2013). Finally, a stricter test of the conceptual matching idea would be to compare relationships between applicant reactions and outcomes that differ in their levels of conceptual proximity (cf. McCarthy et al., 2013).

Moreover, future research should further address the extent to which reactions differ between internal and external applicants. It would also be intriguing to study how internal applicants' perceptions relate to other behavioral outcomes, like their later job performance or turnover.

## **Conclusions**

The influence of applicant perceptions on later behavior has long been unclear due to the limited number of studies and a lack of supportive evidence concerning the postulated relationship between applicant perceptions and behavioral outcomes (Hausknecht et al., 2004; McCarthy et al., 2013; Ryan & Ployhart, 2000). In the present research, we found that internal applicants' perceptions of interpersonal justice during the administration of ACs and during feedback affect their later contextual performance. The theoretical implications that stem from the results of our study are that it may be advantageous to study conceptually related perceptions and outcomes in order to obtain more pronounced results when studying the effects of applicant perceptions on later behaviors, and to take the compatibility of perceptions, selection procedures, and outcomes into account in theories that deal with the fairness of selection processes. We hope that our results can stimulate future research dealing with these issues. Finally, we hope that the present results also encourage organizations to focus on ensuring a high quality of interpersonal treatment when administering selection procedures and during feedback to candidates as a means to foster later contextual performance of their employees.

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## General Discussion

The aim of this thesis was to provide accumulated knowledge on the part of applicant reactions to assessment centers (ACs) and thus to contribute to our understanding of the potential antecedents and consequences of applicant reactions to assessment centers (ACs), as well as to provide recommendations on how applicant reactions to ACs may be improved. In the following discussion, I will first summarize the main findings and contributions of the three studies that were conducted for the present thesis. In a next section, general strengths and limitations of this research will be addressed. Finally, I will outline implications for practice and directions for future research that can be derived from the presented results.

### Main Findings and Conclusions

*Study 1* aimed at determining the key components of AC performance ratings that are the basis of AC feedback to candidates. Furthermore, the relationships of these components and a variety of external variables, including criteria and potentially related constructs, were explored. Our results confirmed in an additional setting that a mixed-model architecture as proposed by Hoffman, Melchers, Blair, Kleinmann, and Ladd (2011) that comprises broad dimension factors, exercise factors, and a general performance factor is the closest structural equation model of AC-ratings to date as compared to all formerly tested models.

Going beyond previous research, our contribution shed more light on the criterion-related validity of the proposed components of the new model, especially the general performance factor. Specifically, all components of the proposed model were related to two different facets of the criterion training performance. Thus, we extended criterion-related evidence for the validity of the postulated model with regards to a set of new criteria. Furthermore, the broad dimensions as well as the general performance factor explained incremental variance in these criteria beyond variance accounted for by the exercise factors. While in Hoffman et al.'s (2011) initial studies the general performance factor did not

significantly contribute to criterion variance, the general performance factor in our study did. Our finding indicates that this factor potentially captures the extent to which participants demonstrate overall effective and job-relevant AC performance across all exercises or dimensions. While some researchers explain that this factor may reflect rater effect bias (Woehr, Meriac, & Bowler, 2012), our results suggest that the meaning of this factor should not be limited to this explanation.

In addition, the positive associations of the latent factors in our model with additional external constructs further advocate the construct-related validity of these latent factors. To name a few, in line with previous research, a broad factor associated with strategic leadership activities in our model was related to the different core self-evaluation constructs (Erez & Judge, 2001; Judge & Kammeyer-Mueller, 2011; Resick, Whitman, Weingarden, & Hiller, 2009), while the general performance factor was related to general mental ability (GMA) and extraversion (Collins et al., 2003). Since a similar structure of broad dimensions and a general performance factor has been found to characterize managerial performance ratings (Hoffman, Lance, Bynum, & Gentry, 2010; Scullen, Mount, & Goff, 2000), this latent structure found in AC ratings seems to be a close approximation of the structure of job performance.

Taken together, our findings imply that exercises, broad dimensions, and a general performance factor are the building blocks of ACs. Thus, it is be advisable to refer to these components while interpreting AC performance.

In an operational AC, *Study 2* explored the role of a broad set of individual difference variables as antecedents to the applicant perceptions of different aspects of the AC that are considered characteristic for the applicants' acceptance of ACs (Kersting, 2010). In line with our hypotheses, the candidates' personality accounted for 10 to 15% of variance in applicants' acceptance perceptions even beyond self-rated and actual performance in the selection procedure. As in previous research concerning the Big Five factors of personality (e.g., Truxillo, Bauer, Campion, & Paronto, 2006), agreeable individuals seemed to be more

considerate and compliant in the AC, and thus consistently perceived the various aspects of the AC more positively (e.g., measurement quality, controllability, and quality of administration). In addition, participants who were less emotionally stable rated dimensions associated with the ability to deal with stressors and insecurity somewhat more negatively than emotionally stable participants (Costa & McCrae, 1992). Furthermore, our findings illustrated that individuals who believe they are responsible for important outcomes (locus of control) and who are sure of being able to influence these outcomes (self-efficacy) generally perceived the challenging situation of an AC more positively and thus rated almost all acceptance dimensions more positively (e.g., face validity, measurement quality, controllability, absence of strain). Trait negative affectivity was related to perceptions of the AC that are related to emotional experience, such as perceived absence of strain or quality of administration. Finally, the applicants' GMA did not influence their acceptance of ACs.

Beyond the fact that its findings expanded extant knowledge on the part of antecedents of applicant reactions (e.g., included new applicant perception dimensions and individual difference traits, like core self-evaluations constructs and trait affect), a further contribution of *Study 2* lies therein that it determined the influence of different characteristics of applicants on their different perceptions of the selection procedure relative to each other. The results showed that the core self-evaluations constructs have a stronger impact on AC-perceptions than the Big Five factors of personality. On the other hand, trait affectivity accounted for less variance in applicant perceptions than the Big Five factors, while GMA did not account for variance in applicant perceptions. Since previous research mostly involved the Big Five (Bernerth, Feild, Giles, & Cole, 2006; Truxillo et al., 2006), these findings suggest that the core self-evaluations might be more important for applicant reactions, especially applicant reactions to the AC.

Given that the core self-evaluation constructs have rarely been subject to applicant reactions research as antecedents of applicant perceptions (Hausknecht, Day, & Thomas,

2004) and were, in some studies, solely assessed as selection outcomes (e.g., Ployhart & Ryan, 1997; Ryan & Ployhart, 2000), our results underline the importance of considering the influence of these variables on applicant perceptions as well as on their relevant outcomes in applicant reactions research, particularly when studying applicant reactions to ACs. Since the core self-evaluations were also found to be linked to work-related attitudes and job performance (Judge & Bono, 2001), our findings indicate that these variables may be sources of contamination effects. This link means it is possible that some positive relationships found between applicant perceptions and the respective outcomes that are correlates of the core self-evaluation factors may, to some extent, also be due to the influence of these personality traits.

*Study 3* further addressed the behavioral outcomes of AC candidates' perceptions under several conditions that potentially make it more likely for applicant perceptions to affect their later behaviors. Specifically, we studied the postulated relationship between applicant perceptions and behavioral outcomes in a sample of internal applicants (Ford, Truxillo, & Bauer, 2009), with regards to an outcome that may be potentially more influenced by applicant perceptions than previously studied variables (Organ, 1988), and we chose applicant perceptions and selection procedures that were conceptually related to the outcome as proposed by the compatibility principle (Ajzen & Fishbein, 1977). This study's main findings illustrate that internal applicants' perceptions of interpersonal justice during the administration of the AC and during AC feedback have an impact on important behavioral outcomes that affect organizational effectiveness, like contextual performance. This relationship was consistent even after we controlled for initial values of the outcome. In addition, applicant perceptions explained variance in ratings of contextual performance and, to some extent, in actual behavior (Spitzmüller, Glenn, Sutton, Barr, & Rogelberg, 2007) even beyond variance accounted for by outcome favorability and outcome fairness. Given that later variables are seen as consistent predictors of applicant reactions (Ryan & Ployhart, 2000),

these findings illustrate the relative importance of applicant perceptions, especially internal applicants' perceptions, for their later behaviors.

Taken together, the results from *Studies 1, 2 and 3* shed more light on different antecedents of applicant reactions to ACs and, to a certain degree, on their relationships with each other. For example, the core self-evaluations constructs were predictors of effective leadership performance in the AC (*Study 1*) and also of applicant AC acceptance dimensions (*Study 2*). This finding means, for example, that some individuals are potentially predisposed to be more effective in some ACs, and they also tend to accept ACs to a greater degree. In addition, the results from this thesis suggest that candidate reactions to ACs have the potential to influence organizational effectiveness, since they may also impact the candidates' behaviors in the organization. These results mean that applicant reactions are equally important from the perspective of organizations and from the perspective of applicants. Therefore, this thesis is a contribution of accumulated, important knowledge that equally addresses the concerns of candidates during a selection procedure as well as the concerns of organizations that apply these selection procedures.

### **Strengths and Limitations**

A considerable strength of this thesis is that it offers a multifaceted perspective of applicant reactions to ACs: First, we focused on antecedents of applicant reactions from two different perspectives, namely characteristics of the selection procedure and characteristics of the applicants. Second, we took AC-specific characteristics into account. In particular, we addressed important topics that are critical for ACs, such as AC construct-related validity. Furthermore, we focused on AC-specific perceptions when studying the effects of characteristics of the applicants. Third, we illustrated potential behavioral consequences of applicant perceptions and provided first insights into how these consequences could be positively influenced. These behavioral consequences of applicant AC-perceptions were determined in a longitudinal setting. This way, we were able to demonstrate that applicant

perceptions of ACs clearly have the potential to affect organizational effectiveness, and therefore should be subject to future applicant reactions research.

A further strength is that the thesis involved data of internal applicants (*Study 3*), or data from a sample that is highly comparable to internal applicants (*Study 2*). Given that there is little empirical work with this important applicant group despite repeated calls for research in this area (Ford et al., 2009; Hausknecht et al., 2004; Ryan & Ployhart, 2000), our findings are a meaningful contribution to the understanding of factors that may influence the reactions of internal candidates. Furthermore, since ACs are often used for selection or development of internal candidates, we addressed an important need for information within the field of applicant reactions to ACs.

Another strength of this thesis is that all data were collected in a real applicant setting. Since many studies in the field of applicant reactions involved participants in a hypothetical setting, their results may not generalize to actual applicants (cf. Hausknecht et al., 2004). Furthermore, most of these prior studies were conducted with college students who differ from real applicants in terms of their job-seeking experience or job experience etc. (cf. Hausknecht et al., 2004) and who are likely to be rather homogeneous in regards to their educational backgrounds. Because our study involved young as well as older workers and workers with various educational backgrounds, our samples are possibly more representative of different applicant populations.

Besides its notable strengths, the presented thesis also has some limitations. All studies that it encompasses were conducted in one organizational culture, namely within the context of the Swiss Armed Forces. Although the Swiss military, with its headcount of 4,500 fulltime staff and 200,000 militia members (Szvircsev Tresch, 2011), employs a great variety of professionals, there may be attributes of the organizational culture (e.g., hierarchical organization) that are specific for this organization (Katz, 1990). It is also assumed that organizational characteristics may influence applicant reactions (Hausknecht et al., 2004).

However, our findings may also be seen as a contribution to the generalizability of applicant reactions research from an additional setting.

Furthermore, since data of the personality variables that were analyzed in *Study 1* and *Study 2* were collected in a selection setting, we cannot rule out the influence of social desirability in the candidates' responses to the personality questionnaires. Although, as a precautionary measure, the candidates were informed that data from the personality questionnaires would only be used for research purposes, it is possible that they were motivated to give somewhat socially desired responses.

Finally, a limitation that is specific for *Study 1* in light of the applicant reactions perspective is that, although we determined the components of AC performance that should be the basis of feedback to candidates, we could not test how feedback that is given on the basis of these AC components affects AC candidates' reactions and further selection outcomes. We thus rely on a general assumption by researchers that feedback that involves dimensions is more useful to candidates (Howard, 1997).

### **Implications for Practice**

The results from the three studies that are presented in this thesis allow several important practical implications for the design and administration of ACs. Findings presented in *Study 1* suggest that a mixed-model architecture should be applied when designing ACs and while providing feedback to candidates concerning their AC performance. A possibility would be to design the AC using narrow dimensions that are organized around conceptually supported broad dimensions (Hoffman et al., 2011) which can be derived from existing taxonomies of broad dimension factors (Arthur, Day, McNelly, & Edens, 2003; Borman & Brush, 1993; Shore, Thornton, & Shore, 1990). Furthermore, a design of the relevant exercises should involve simulations that closely represent the relevant job tasks and business challenges yet also allow optimal observations of the critical dimensions (Bank, Brock, Ramesh, & Hazucha, 2012). In a respective feedback session at the end of the AC, feedback

could be given to candidates regarding how they participated in a specific task (e.g., strategic group meeting or meeting with subordinate) and regarding how they performed on relevant narrow dimensions of specific broad performance domains; for example, how they demonstrated the influencing skills that are encompassed in the broad dimension leadership skills (Bank et al., 2012). A practical implication for the use of the general performance factor in feedback is not unambiguous. A possibility could be to inform the candidate about the overall effectiveness of his or her performance in the specific AC by using the overall assessment score.

The results from the study that is presented in *Study 2* suggest that practitioners could consider the characteristics of their specific applicant pool while designing ACs and providing feedback. This suggestion means that knowing how different personality traits relate to applicant perceptions that are relevant for the acceptance of the selection procedure could help the employer design a selection procedure in a way so that it meets the needs of their specific applicants and promotes their acceptance of the procedure. For example, candidates who are rather low in agreeableness may need more information concerning the demands of different tasks in an AC (controllability). This knowledge may potentially lead to more positive perceptions and may make it more likely that the candidate accepts the AC. As a further example, this knowledge could also be useful for ACs that are used for development purposes. Providing applicants who are, for example, low in self-efficacy or tend to attribute important outcomes externally with more information about AC-exercises, the AC administration process (controllability), and its measurement quality may lead to more favorable applicant reactions. Furthermore, these favorable reactions may give the candidates a positive attitude with regards to a following developmental program and increase their motivation to attend these programs (Stanhope et al., 2013). Since either motivation or a positive attitude is important for the training success of candidates who are low in core self-evaluations (Stanhope et al., 2013), our findings may be of support when designing employee



development programs that include ACs as diagnostic test batteries and subsequent training programs.

The findings presented in *Study 3* offer guidance on how internal AC-candidates' behaviors towards the organization could be influenced positively. Providing candidates with high quality interpersonal treatment during the administration of the selection procedure and during feedback is one such possibility. This suggestion means that applicants should be approached with warmth and respect (Gilliland, 1993; Gilliland & Steiner, 2012) throughout the selection procedure and during AC feedback. Furthermore, findings from the studies presented in *Study 1* and *Study 2* can be combined to ensure that AC candidates' needs are optimally met during the selection procedure. This suggestion means that AC feedback should be provided on the basis of valid constructs as suggested in *Study 1*. Furthermore, if information concerning the candidates' personality attributes is available, candidates should be presented with information that is relevant for their acceptance of the selection procedure in accordance with the implications presented in *Study 2*.

### **Directions for Research**

Finally, results from this research also provide some major implications for future research in the field of applicant reactions to selection procedures. I will start with antecedents on the part of the characteristics of the selection procedure. Many of the previous studies in the field of applicant reactions research have focused on applicant perceptions as suggested by the organizational justice framework proposed by Gilliland (1993). Although the indisputable strengths of this model lie in its embedment in organizational justice theory, there may be a need to also consider applicant perceptions that are not part of this model (Hausknecht et al., 2004; Ryan & Ployhart, 2000), but are characteristic for a certain selection procedure. Such a characteristic that is specific for ACs was explored in *Study 1* of the present thesis. Future research may yield important insights by studying how applicants perceive and react to feedback that is based on the latent components of the mixed-model that was proposed by

Hoffman et al. (2011). However, arising from this implication is the need for further information about how the proposed model structure can best be realized in practice, and how it can be applied to provide meaningful feedback to AC-candidates. For example, if, as proposed by Hoffman et al. (2011), ACs should be designed to measure narrow dimensions that are organized around empirically supported broad dimensions, there is still a need for empirical evidence showing that the proposed model structure will also be found if the broad dimension factors were determined beforehand, during AC design, and not afterwards as in our study.

In addition, research could determine how feedback given on the basis of the new latent factors relates to perceived and actual usefulness of feedback. Another possibility would be to explore the extent to which perceived construct-related validity of AC-feedback components relates to applicant reactions (e.g., feedback usefulness, acceptance of feedback) and important outcomes (e.g., job engagement, job performance). In concert with the assumptions of the compatibility principle (Ajzen & Fishbein, 1977) presented in *Study 3*, it may be helpful to determine the perceived usefulness of feedback in a sample of internal candidates who attend a developmental AC with regards to an important behavioral criterion like training performance.

Findings with regards to the characteristics of the applicants presented in *Study 2* imply that research in the field of applicant reactions should carefully consider personality traits, particularly the core self-evaluation constructs and agreeableness, when studying the influence of applicant perceptions on important outcomes. Since there is evidence suggesting that personality traits are related to attitudes (e.g., job satisfaction; Judge, Locke, Durham, & Kluger, 1998) and behaviors (e.g., performance; Chang, Ferris, Johnson, Rosen, & Tan, 2011), there may be potential for contamination effects on applicant perceptions and outcome variables caused by personality traits.

On the other hand, some studies suggest that self-efficacy or self-esteem may also be influenced by the applicants' perceptions of selection procedures (Bauer, Maertz, JR., Dolen, & Campion, 1998; Truxillo, Bauer, & Sanchez, 2001). Since these perceptions were found to be important for training success and job performance (Chang et al., 2011; Stanhope et al., 2013), more knowledge is needed to understand how these self-perceptions influence applicant perceptions as well as whether and how they change as a result of applicant perceptions in selection procedures. This research could also have important implications for ACs that are used for developmental purposes.

Finally, based on findings presented in *Study 3*, research should further explore a broader range of possibilities of studying conceptually related applicant reactions, behavioral outcomes, and selection procedures. A stricter test to the conceptual matching hypothesis would be to compare relationships between applicant reactions and outcomes that differ in their levels of conceptual proximity (McCarthy et al., 2013). Furthermore, since equivalent data that involved reactions of external applicants were not available for this thesis, additional studies could address the extent to which internal applicants' reactions differ from the reactions of external applicants.

Taken together, the present thesis provided important knowledge concerning applicant reactions in general and concerning applicant reactions to ACs in particular. Should its findings be considered and its implications be addressed in future research, I believe that the present contribution will lead to valid selection decisions that equally address the interests of applicants and of organizations.

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### Summary

This dissertation shed more light on the potential antecedents and behavioral outcomes of applicant reactions to assessment centers (ACs) from three different perspectives. From the perspective of the characteristics of the selection procedure, *Study 1* examined the underlying constructs of AC-performance that are used for candidate feedback. Results indicated that a structure with one general performance factor, broad dimension factors, and exercise factors as proposed by Hoffman, Melchers, Blair, Kleinmann and Ladd (2011) closely represents variance in AC-performance. Furthermore, all components of the proposed model explained incremental variance in the criterion training performance. Finally, the relationships between the new components and external variables advocated their construct-related validity. From the perspective of the characteristics of AC-candidates, *Study 2* examined individual difference factors that may predispose applicants to perceive different aspects of ACs in a predictable way. Results indicated that the core self-evaluations constructs (of these mostly self-efficacy and locus of control) explain more variance in applicant perceptions than the Big Five factors of personality (of these mostly agreeableness). Trait affectivity explained less variance in applicant perceptions than the Big Five factors. General mental ability (GMA) did not account for variance in applicant perceptions of the AC. From the perspective of behavioral outcomes of applicant reactions, *Study 3* focused on conditions that make it more probable that applicant perceptions affect their later behavior. The study was conducted in a sample of internal applicants, with regards to contextual performance, a behavioral outcome that is potentially especially influenced by applicant perceptions. Finally, as suggested by the compatibility principle, applicant perceptions that were conceptually related to the outcome, namely perceptions of interpersonal justice, were assessed in conceptually matching selection procedures, namely in ACs. Results indicated that perceptions of interpersonal justice affect ratings and a behavioral indicator of contextual performance of internal candidates and explain variance in both criteria even beyond outcome favorability and distributive justice.



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### Educational and Employment Background

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2010 – 2012	Research Project Coworker Recruiting & Retention, Military academy at the ETH Zurich, Birmensdorf
2009 – 2010	Junior Consultant Banking & Insurance, Wilhelm Kaderselektion AG, Zurich
2003 – 2008	Psychological Consultant, Center for Sleep Medicine Fluntern, Zurich
2001 – 2008	Master of Science in Work and Organizational Psychology, Economics and German Literature as Secondary Studies, University of Zurich
1998 – 2000	Bachelor in German Linguistics and Literature, University of Zurich

## Publications and Congress Presentations

- Merkulova, N., Melchers, K.G., Kleinmann, M., Annen, H., & Szvircsev Tresch, T. (2013, May). *Effects of Individual Differences on Applicant Reactions in an Operational Assessment Center*. Paper presented at the 16th Congress of the European Association of Work and Organizational Psychology (EAWOP), Münster, Germany.
- Merkulova, N., Melchers, K.G., Kleinmann, M., Annen, H., & Szvircsev Tresch, T. (2013, April). *Testing a New Conceptual Model of Assessment Center Ratings*. Paper presented at the 28th Annual Conference of the Society for Industrial and Organizational Psychology (SIOP), Houston, TX, USA.
- Merkulova, N., Melchers, K.G., Kleinmann, M., Annen, H., & Szvircsev Tresch, T. (2012, June). *Not just a Myth? Testing a New Conceptual Model for Assessment Center Ratings*. Paper presented at the 2nd meeting of the European Network of Selection Researchers (ENESER), Sheffield, UK.
- Merkulova, N., & Szvircsev Tresch, T. (2012, July). *A study of turnover in the Swiss Armed Forces: the current work situation of former employees*. Paper presented at the Research Committee 01, Armed Forces & Conflict Resolution interim meeting, Ljubljana, Slovenia.
- Szvircsev Tresch, T., & Merkulova, N. (2011, October). *Not an attractive job anymore? Turnover of officers and NCO's in the Swiss Armed Forces*. Paper presented at the Biennial International Conference, Inter-University Seminar on Armed Forces and Society. Chicago, USA.
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- Merkulova, Natalia (2010, September). *A study of turnover in the Swiss Armed Forces focusing on officers and NCO's*. Paper presented at the EDA-Seminar "The Impact of Demographic Change on Recruitment, Retention and Systems Design", Brussels, Belgium.
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